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CIO-100

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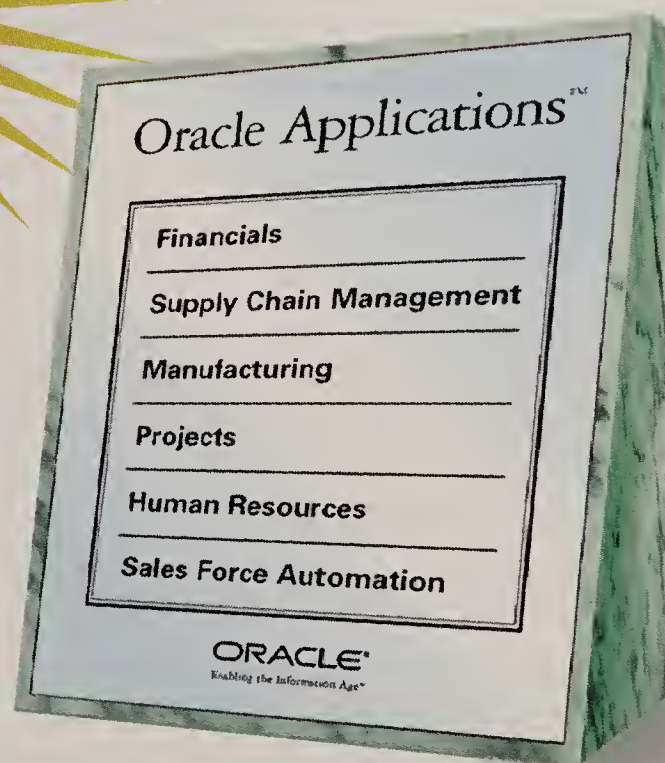
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**CAN YOU PLUG
ALL TYPES OF PEOPLE
INTO ONE TYPE
OF COMPUTER?**





No.

After all, people are different. Jobs are different. Companies are different. And people need different types of computers to get their jobs done. Some need powerful PC's and workstations. Some need light and powerful laptops. Some need hand-held devices. Some need simple terminals running off a network. And some need a combination of machines.

Computers *must* be different to meet the different demands people have in their jobs.

And the reason computers *can* be different is because Microsoft® Windows® is the same.

This benefits everyone in your organization. If you're the one actually using the computer, for example, Windows looks and acts the same familiar way wherever you see it, so you can move from one device to another without having to learn anything new.

If you're the one managing the computer system, the Windows platform makes your life automatically simpler; you can deploy different systems in different departments for different jobs and maintain them as if they're the same.

And if you're the one paying for the system, you spring for just as much computing power as you need for each employee. Not less, not more. And your employees end up with the tools they need to get their jobs done.

Windows is, above all, flexible.

So, let's rephrase the question. Can you plug all types of people into one operating system?

Yes.

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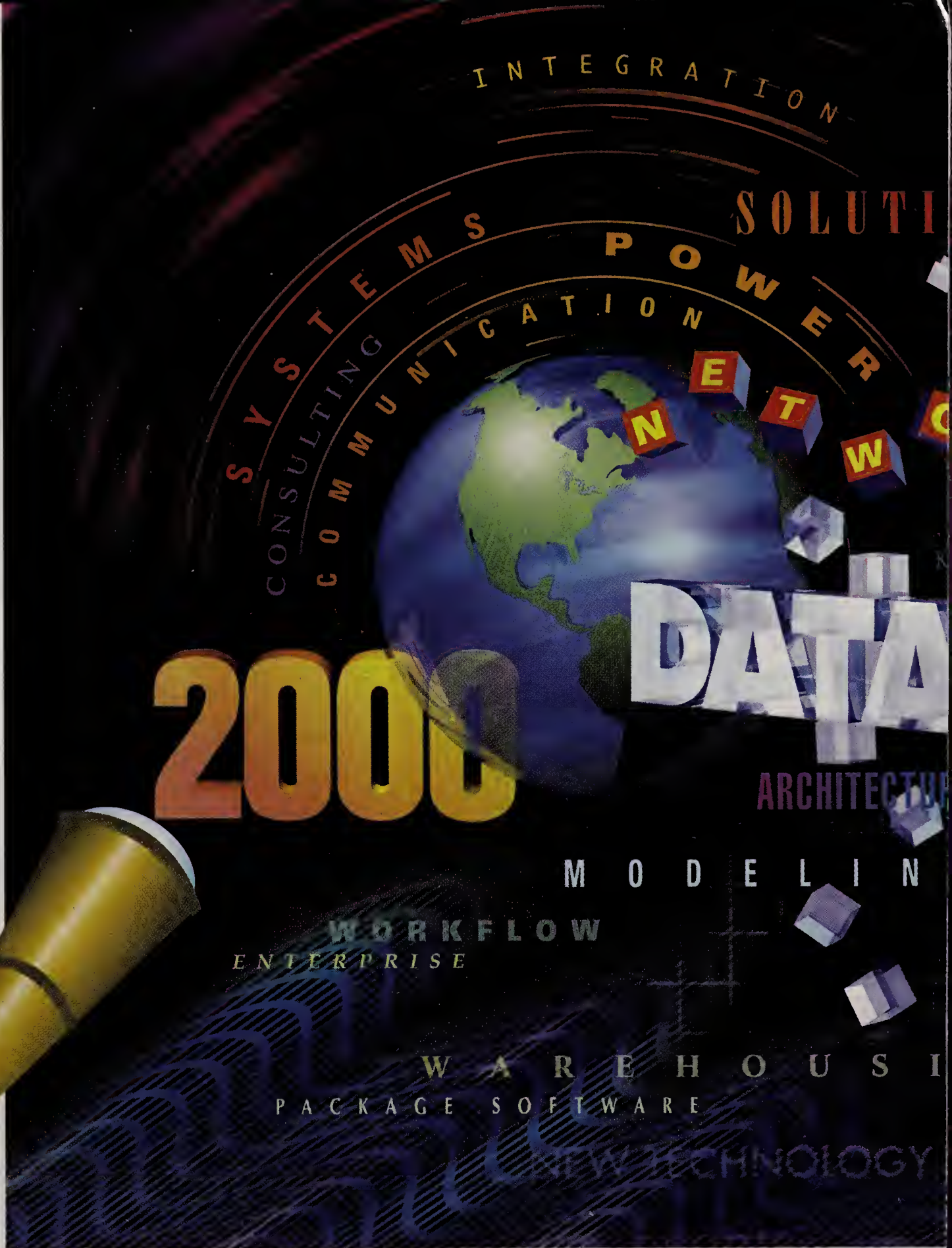


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In Box

LETTER FROM THE EDITOR, READER FEEDBACK AND HOW TO REACH US

This year's CIO-100 issue is something of a departure for us. In the previous nine years, we selected our honorees based on their performance within a critical business category—quality, customer service, innovation—and then looked at how IT was used to support those efforts. Now that management of information technology itself has become a critical business operation, we decided it was time to look at IS performance head-on. In doing so, we created what I believe is one of the most comprehensively enlightening and useful issues of *CIO* ever. If I sound immodest in praising this issue, it's because I personally had very little to do with it. Senior Editor Carol Hildebrand was the driving force behind this year's CIO-100. She championed the theme and, with the help of some trusted advisers, developed the categories and the specific criteria within them (see Page 41). She crafted the survey, created the structure of the issue as a whole, oversaw development of the articles and wrote the defining overview piece. And she did all this with skill, assurance and more than a little good grace.



Senior Graphic Designer Hana Barker is responsible for the gorgeous design. She, Terri Mitchell and newcomer Robin Belliveau once again worked the graphical magic that makes *CIO* both user-friendly and a pleasure to look at.

The CIO-100 team did a fabulous job of bringing the best practices categories to life. Writers Peter Fabris, Tom Field and freelancer Tracy Mayor did extensive interviews with CIOs and their business partners and IS customers to explore the extent to which these companies really do represent the best of the best. Megan Santosus wrote a wonderful retrospective on the CIO-100 since its inception (see Page 113). Perry Glasser switch-hit as a writer and an editor, and Sara Shay not only survived her first full cycle as an associate editor, she shone. Executive Editor Richard Pastore served in an advisory capacity and wrote one of the profiles despite the fact that he was concurrently spearheading our ambitious 10th anniversary issue, which you will receive next month.

Lisa Kerber administered the awards process and oversaw the data collection, working with contributor Sue Sudan. Tom Wailgum handled the monumental task of fact checking all the data on the winners. Cheryl Asselin worked with Tom and single-handedly copy edited this, our largest issue ever.

We hope you enjoy reading this issue of *CIO* as much as we enjoyed working on it. In fact, we liked this approach so much, we're considering continuing it in future editions of the CIO-100. Let us know what you think.


lundberg@cio.com

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NCS IN ACTION

I really enjoyed the network computer story ["NCs: The New Wild Frontier"] and the editor's letter from the June 1, 1997, issue of *CIO*. Contra Costa County [Calif.] is IBM's first major government account piloting NCs. We have about eight out here; they will be of major benefit in some areas of the business (look-ups and data entry, for example) and not at all useful in others.

The biggest savings to date appears to be in the simple installation, on a machine-by-machine basis. It takes 15 minutes to set up as opposed to one and a half hours on average.

Steve Steinbrecher

CIO

*Contra Costa County
Martinez, Calif.*

sstei@dps.co.contra-costa.ca.us



I feel that the excitement about NCs is caused by those new to the network world. Back in the late 1980s and early '90s, many of us were excited about X terminals. The cost of ownership and ease of management made it a CIO's dream. However, after less than a year of use, most of us had to increase memory and add hard disks for booting, caching and virtual memory. In effect, we turned the X terminals into workstations—which is what we had tried to avoid in the first place.

I can only hope that those planning to buy NCs now don't find out later that they want to upgrade the box to contain more memory and local storage—effectively turning them back into PCs!

I must agree with writer Carol

Hildebrand that most NCs will be used to replace existing dumb terminals. I can't see them replacing PCs.

Pongsatorn P. Sukhum

Managing Director

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sukhum@waveman.com

I work on a government project with strict security needs. Long ago we traded our PCs for NCs. All our machines run Windows in an environment where users are unable to upload software and download data unless sanctioned by LAN administrators ahead of time. This transformation required 300 bytes of assembly language to disable or enable floppy and hard drives based on a user's privilege. There are only a few hard drives, and although floppies are

prevalent, the code I wrote reduced considerably the time required to remove 1,500 floppy drives.

What will be new is the network woes. I have seen 1,500 users down all day, and it is not pretty. If properly designed, however, the network will stay

up. Bandwidth, on the other hand, is the real issue. Networks normally are not designed to handle the

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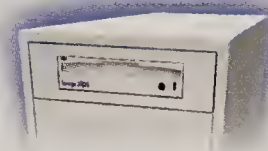


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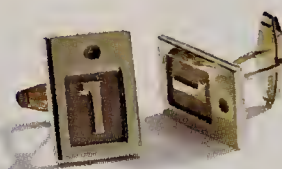
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traffic associated with having everything remote. Imagine the surprise some bright CIO is in for if he keeps any part of his network in a non-switched 10Mbps environment. NCs will drag his network down. Even FDDI [fiber distributed data interface] will have problems keeping up with the gigabytes of information passing through the network daily.

NCs are a bad idea. Sure, they promise the dream of configuration management, less risk and lower maintenance costs. Just let me know how that balances with the increase in network demands and the unending appetite for additional bandwidth.

Mark Peugeot

*General Partner
Lancaster Internet Services
Lancaster, Calif.
mark@ptw.com*

INTERNATIONAL RELATIONS

Thanks for your recent index of articles

["Six Months in Review"] in the June 15, 1997, issue of *CIO*. I find it to be a very handy reference.

Scanning through it, I ran across the summary of "Case in Point" from your April 15 issue, where your Enterprise Value Retreat participants advised a family business to invest in IT to make international expansion work. Go figure, a bunch of IT folks recommending that.

Another option to pass along to that family business is to start doing homework on those countries in which you think you can expand, differentiate or penetrate the market. Then, in the 10 or 12 most promising countries, open up

branch offices and equip them with a PC or two, perhaps with Internet access. But go in and

get to know a country, its laws, customs and culture before making any

large-scale IT investments (or any other large-scale investments). When you actually try to conduct business in another country, you get a slightly different

picture of what it's going to be like to do business in that country than you would get simply by doing research and jumping in. You find out the true barriers to competing.

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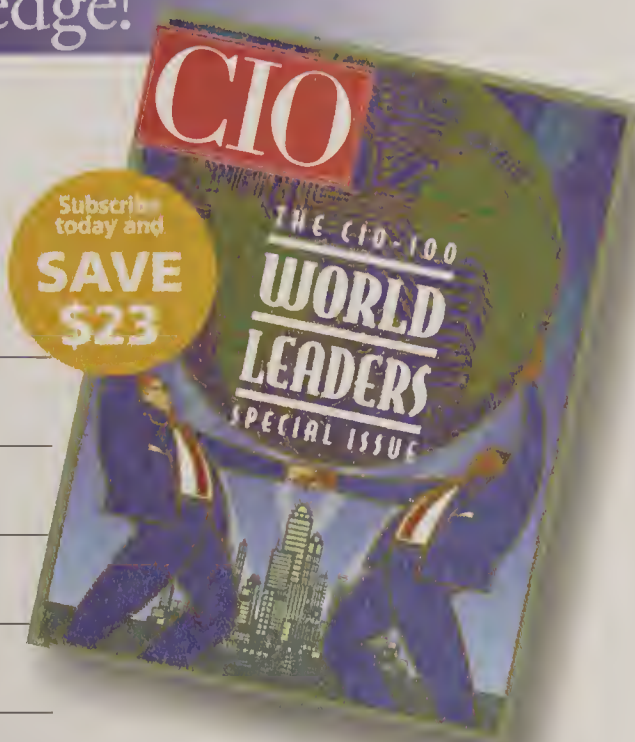
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INJ7

[In your May 15, 1997, editor's letter,] you inquired about the importance of the "T" in IT. I had the recurring thought that the important "T" is "trust." Technology and "push" can be of benefit

CFOs: KISS OF DEATH?

My experiences allow me perspective on both sides of your discussion regarding whether reporting to a CFO is the "kiss of death" [May 1, 1997, edi-

I report to the divisional as changed twice over the s. The first individual was iputer-literate but took an ew technologies. His ined him to have an open t came to the possibilities hnologies offered. How- ond CFO was more of a untant. Instead of launch- , we immediately began ge-scale cost-benefit stud- sting and planned systems. ses, I found it possible to T goals; although in the lat- oject lead times were ex- erage of five months. That it on additional project jus- s.

The primary key to success? Identifying and accurately profiling the effect of a new system on secondary processes. Often the primary processes that affect a new technology or system do

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not justify the additional costs. Many significant returns of automation and/or system implementation are found in reducing or avoiding costs in secondary processes.

Dan Vardell
Systems Manager
BFI Medical Systems
dan.vardell@bfi.com

I am the CIO for a medium-size banking group in central Texas. I do not report to the CFO per se, but my CEO is becoming more of a CFO. I started in this position concentrating on hardware and software issues. I now have to concentrate more on the cost issues. It seems as though the market is becoming so competitive that one must be more concerned with the costs and benefits today than one was just six months ago. It is the responsibility of the CIO to "sell" the executive decision makers on the recommended enhance-

ments and changes.

My previous sales experience has enabled me to do just that. To date, all the truly necessary items and projects have been approved. But because of the changing role of the CIO, my position is a conglomeration of a network technician/salesman/personnel director/accountant/executive administrator.



Steve Shearer
CIO
ExTraCo Bankshares
Waco, Texas
sshearer@fbmcweb.com

I am employed as a manager of finance and administration for a major defense contractor. In this position, I helped orchestrate the formation of a coordinated MIS function. My ideal CIO has direct line responsibility to the CEO; is not a techie but is conversant with the technology; has not bubbled up through accounting but has solid business savvy; is not a downsized TQM practitioner but can build collaborative relationships; and is an excellent communicator. Where do we find such people? I don't know, but I think business schools need to start developing programs to train them.

Gregory J. Altieri
Alexandria, Va.
galtieri@fos.isso.esys.com

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Publisher's Note

"You've got to have the base down to work your way up the pyramid. And by the way, you're not going to get a lot of thanks for getting the basics right."

—Richard W. Swanborg Jr.

*President
ICEX Inc.*

When we were children, we were told to clean our rooms before going out to play. As teenagers, we were told to finish our homework before watching TV. And as adults, we live by our own rules: We

finish the dishes before curling up with a good book; we pay off our bills before planning the next vacation. We need to have a foundation in place before we can have fun.

The same is true of successful IT departments, which must create an organized, reliable infrastructure with credible service before moving on to the "fun" part: innovation and business collaboration that increases the success of the enterprise. However, achieving excellence is no easy task.

Many organizations have difficulty establishing the infrastructure, whereas others run into trouble trying to collaborate before a foundation is in place.

This year's 10th annual CIO-100 issue honors top IT performers, those organizations that have mastered the three components of IT excellence—infrastructure, service and innovation. Our award recipients have proven themselves in one of five best practices categories: infrastructure management, internal customer support, internal operations, IT and business alignment, and innovation and learning. Take a look at our list of honorees and their achievements in building successful IT operations within their organizations. By deploying information technology as a strategic business tool, these thought leaders have successfully aligned IT strategy with their companies' corporate vision.

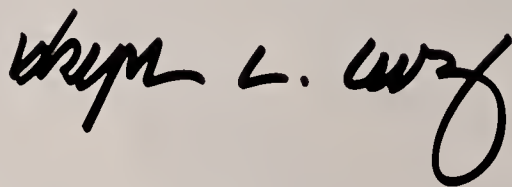


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Trendlines

NEWS, INSIGHT, HUMOR, REVIEWS

Edited by Carol Hildebrand

People Who Love People

Who's most likely to be the best IT help desk employee?

- A. Systems analyst
- B. Saxophonist
- C. Art historian
- D. Ex-Cobol programmer

If you answered B or C, you may be on to something.

HELP DESKS At CIO-100 honoree Elf Atochem North America Inc., the help desk is manned with at least one professional musician, an art major and various co-op students from Drexel University. John Hirt, director of client services for the Philadelphia-based chemicals manufacturer, says artistic people possess a combination of interpersonal skills and technical aptitude that makes them ideal help desk staff. Hirt still uses career technical people

as "desk-side technicians," the folks dispatched to do on-site diagnostics and repair. But he prefers high-touch individuals who "see people as people" as the first point of contact for approximately 1,200 phone calls from desperate users each month. Right now, Atochem's help desk includes an art history major and a musician. Atochem users shouldn't be surprised if they hear violins while they tell their sad stories about crashes and frozen PC screens. ■



New Business

KNOWLEDGE PROFESSOR Universities have been dedicated to learning since the Middle Ages, but until now no academic position dedicated to the study of knowledge has existed. Fuji Xerox Co. Ltd. and Xerox Corp. together have given \$1 million to the University of California at Berkeley's Walter A. Haas School of Business to endow a distinguished professorship in knowledge. The position will be filled by Ikujiro Nonaka, dean of the Graduate School of Knowledge Science at the Japan Advanced Institute of Science and Technology at Hokuriki and author of *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*.

While current trends such as reengineering and one-to-



one marketing may help companies get ahead fast, some argue that real growth and lasting benefits come from knowledge management, or the study of how organizations use information.

Berkeley's program will concentrate on bringing together about a dozen professors from areas that historically have not been tied to business or

information technology. Teachers of public policy or organizational behavior studies are just as likely to create interdisciplinary programs with a professor of knowledge as are their colleagues in finance and economics. ■

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Trendlines

IS All-Stars

STOCK TIPS Suppose that somehow on Aug. 1, 1988, the same date the inaugural CIO-100 issue of *CIO* was published, your Ouija Board, tarot cards and Magic 8-Ball together indicated which 10 companies would be most frequently named CIO-100 honorees for the next nine years. If you invested \$100 in a portfolio made up of shares of those IS all-stars, you'd have \$370.17 in your pocket as of April 30, 1997. A 270 percent return is pretty nifty, but if that's not enough to make your broker's heart go pitty-pat, consider your results if you took all dividends in stock. You'd have made slightly more than 425 percent for a whopping total return of \$525.13. (We're not including brokerage commissions and taxes here.)

Still not convinced that good IT makes for good revenues? Compare those numbers with everybody's favorite benchmark. Our friends at Dow Jones Interactive Publishing (*bis.dowjones.com*) crunched these numbers for us, and they say the same \$100 invested in the 30 companies comprising the Dow Jones Industrial Average (DJIA) would have returned \$328.98, or with dividends reinvested, a total return of \$428.30. It's not paltry, but the IS all-stars significantly outperformed team Dow.

It might be blind luck that those all-stars outshone the DJIA. We know that. In this longest bull market in American financial history, a badly trained chimp throwing darts at *The Wall Street Journal* could have made money. We'd never want to suggest that companies with visionary leadership, which have changed the face of business around the world by applying cutting-edge technology, have some sort of competitive edge. Why would we imply that companies that place IS at the center of their strategies set a pace so torrid that others struggle to keep up? We'd never think of it.

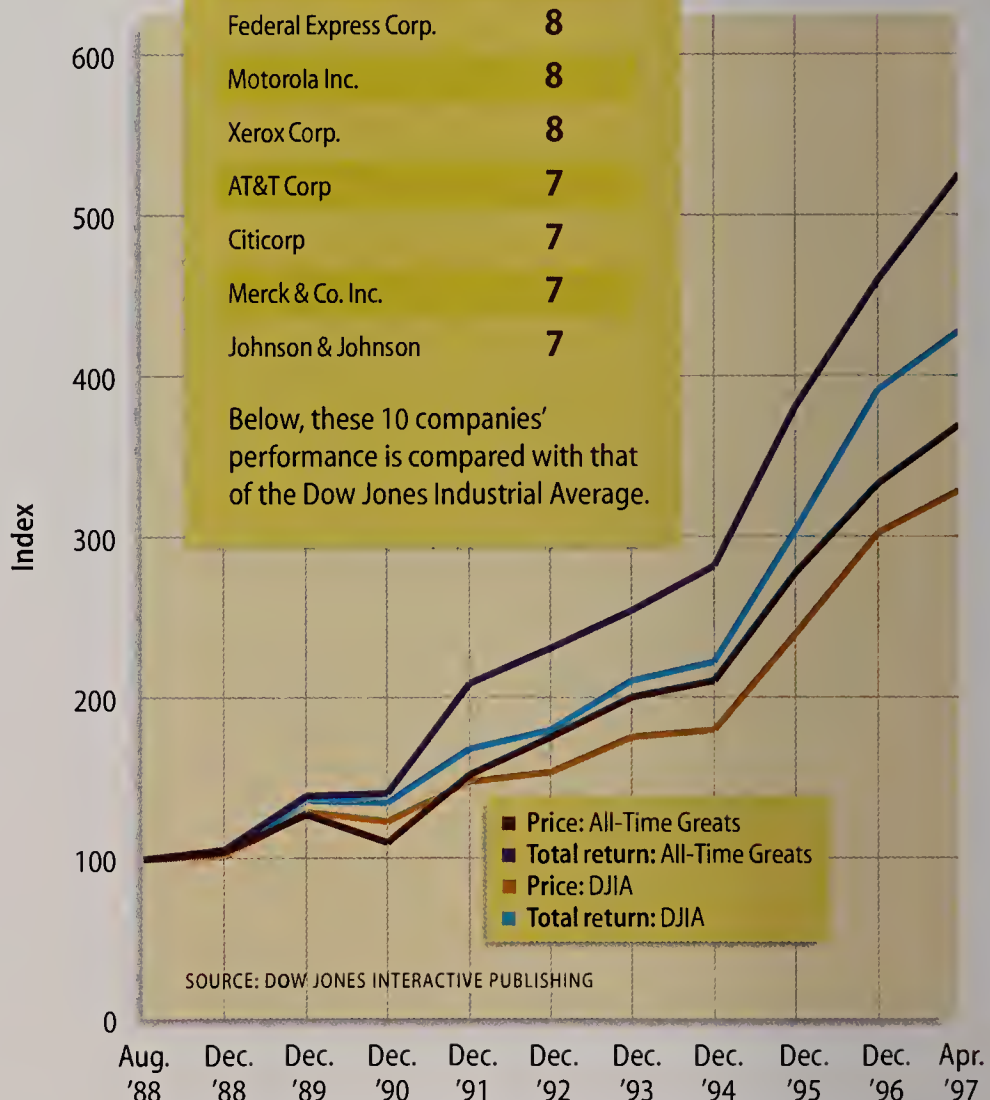
All we've got are our suspicions. —Perry Glasser

CIO's All-Time Greats

The 10 companies most frequently cited as CIO-100 award-winning companies:

COMPANY	AWARDS
The Procter & Gamble Co.	9
Wal-Mart Stores Inc.	9
Ford Motor Co.	8
Federal Express Corp.	8
Motorola Inc.	8
Xerox Corp.	8
AT&T Corp	7
Citicorp	7
Merck & Co. Inc.	7
Johnson & Johnson	7

Below, these 10 companies' performance is compared with that of the Dow Jones Industrial Average.



Captains of Video

I.S. ON T.V. Who says IS folks lack an artistic side? Not the people at CIO-100 honoree MCI Communications Corp. They're working on TV stardom. Seems that an IS-made internal video captured the strategic use of technology so effectively that MCI's Powers That Be decided it would make a dandy ad. And it has—with very little extra work. You may have seen it—MCI and the NASDAQ. Lots of cool camera work, punchy music and smart attitude. Now that's an IS department that knows the business. ■





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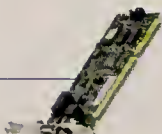
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Trendlines

Code Word: Project Quality

WRITING BETTER SOFTWARE Since the first software jock programmed the ENIAC, computer programming has been a type-out-code-as-fast-as-you-can, shoot-from-the-hip endeavor. But now, the Software Engineering Institute (SEI) at Carnegie Mellon University in Pittsburgh has developed a way to help write better-quality code, and that can only help keep project costs down.

"Accepted practice is to quickly bang out code of unknown quality and count on compiling and testing to find and fix the defects," says Watts Humphrey, an SEI fellow. Humphrey spearheaded the development of a new SEI methodology to make programming a more disciplined field. The new Personal Software Process (PSP) methodology, based on practices adapted from IBM Corp., has helped many companies, including CIO-100 honoree Kraft Foods Inc. (see "The Arts of Kraft," Page 82), upgrade their software project management practices by improving the practices of individual programmers. "Today, when software engineers first learn to write programs in school, they get little guidance on how to plan their work or how to produce quality products," says Humphrey. Programmers have little incentive to do detailed planning because usually they are evaluated on how many lines of code they can produce per day and how quickly they move to the compiling stage. Most managers would give hell to any programmer who isn't producing code from day one of a project.

The objective of PSP is to have every engineer eliminate defects before the first compile or test. Programmers can learn the PSP methodology in about 125 hours.



Off the Shelf

Align For the Bottom Line

The Squandered Computer

By Paul A. Strassmann,
The Information Economics Press, 1997, \$49

In his latest book, Paul Strassmann asserts that "the era of exuberant business spending for computers will end in the next decade." That shift, if it comes to pass, has major implications for IT as CIOs will come under added pressure to prove the value of IT investments. More than ever before, companies will need to document the value of IT.

Essentially a collection of essays, this book isn't intended as a step-by-step guide for plotting alignment or assessing value. Rather, Strassmann provides readers with cautionary tales of what works and what doesn't. With ample case studies and numerous horror stories, he succeeds in his mission.

In Strassmann's view (and that of other experts he cites), value is a direct product of aligning IT with business. Just what does Strassmann mean by alignment? Forget about productivity, improved customer satisfaction and quality; the way to measure IT's alignment with business goals is to gauge IT's impact on the one metric that matters most to CEOs and shareholders: net cash flow. In other words, alignment comes down to accounting, pure and simple.

In an era when business books seem to contain a lot of fluff, Strassmann is refreshingly blunt. Never one to mince words, he offers his take on why IT continues to lag behind the expectations and, in many cases, the basic requirements of business. Among the topics Strassmann dissects are outsourcing, alignment and evaluation methods.

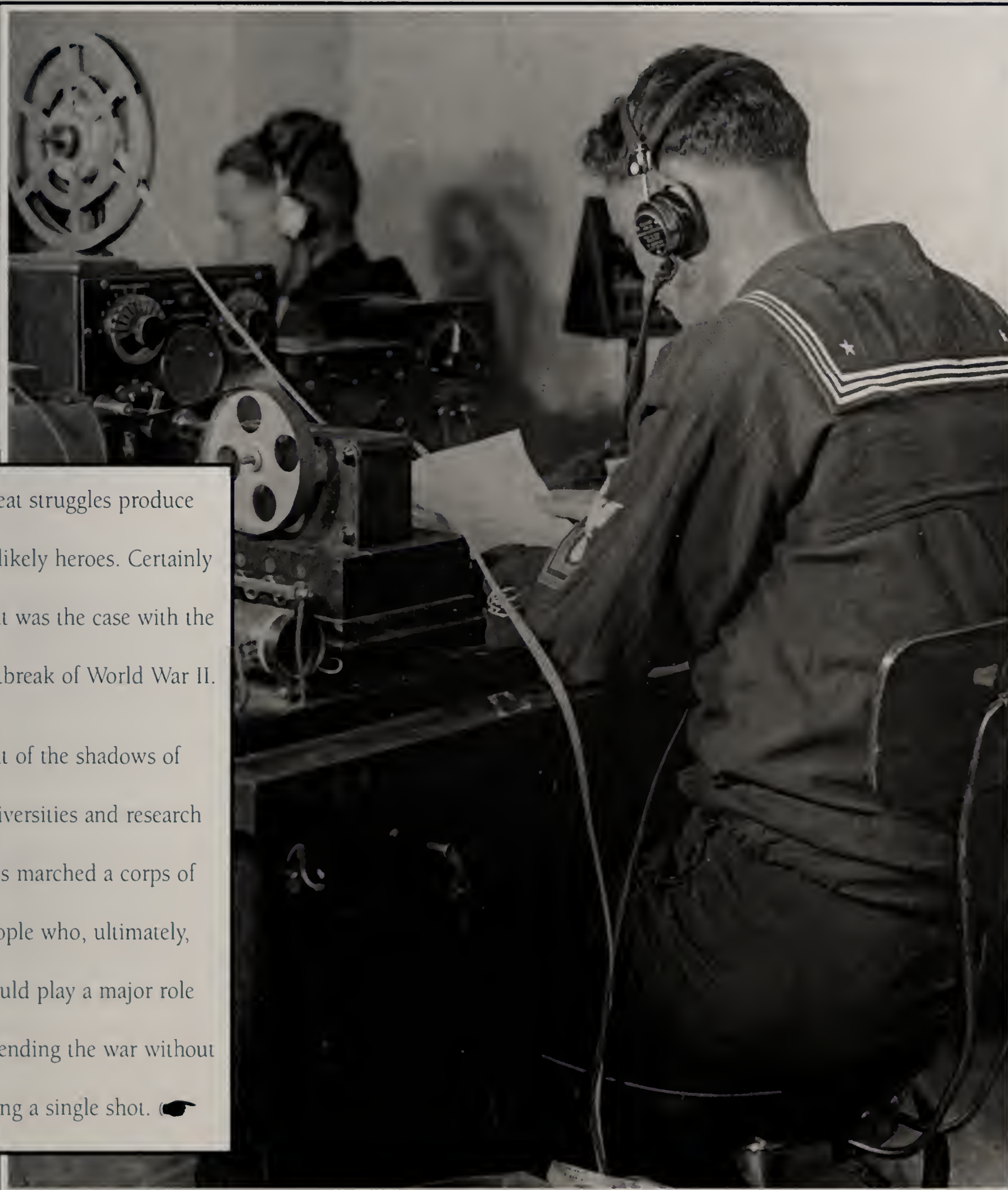
The section exploring residual value will be of particular interest to CIOs. Strassmann covers a lot of ground, including the economics of open systems, the merits of outsourcing and the failure of leadership. For those who like to crunch numbers, the section on evaluation methods explains several options for estimating computer budgets and putting a value on computer assets.

If the book has one fault, it's that some topics could benefit from more detail. Yet maybe this is by design. *The Squandered Computer* is the first book in a three-volume series on alignment. Unfortunately, Strassmann advises readers to wait for the follow-up books before making definitive plans for IT/business alignment. But with the speed of businesses heading into overdrive these days, CIOs who wait may find themselves out of a job.

—M. Santosus



The Tools to Reinvent IT



Great struggles produce unlikely heroes. Certainly that was the case with the outbreak of World War II.

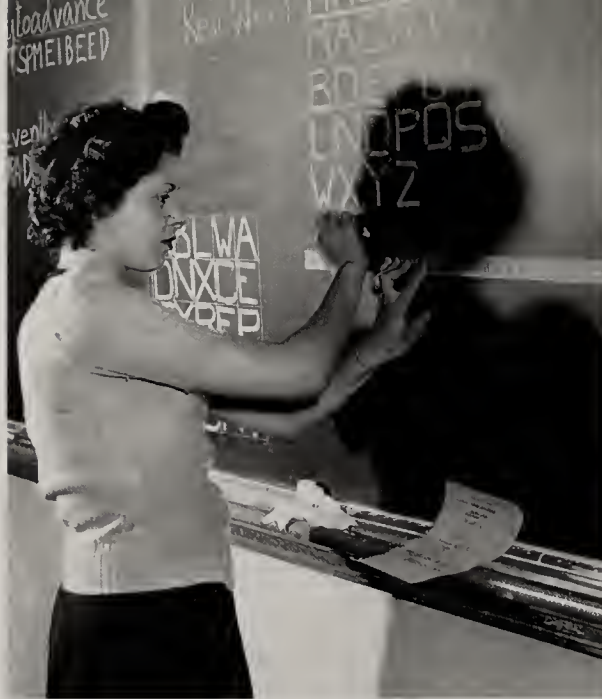
Out of the shadows of universities and research labs marched a corps of people who, ultimately, would play a major role in ending the war without firing a single shot. 🖱

From SAS Institute Inc.

(continued from page 1)

These heroes were statisticians and math whizzes who banded together to form a group of ace code breakers. They took incomprehensible data and turned it into information. Top strategists then turned that information into knowledge to preempt enemy moves and win battle after battle until the war was over.

So it is today with you, the IT community. The businesses, hospitals and governments you work for are in battle. At times, the enemy is rising costs. And at others, it is domestic or international competition or simply the breakneck pace of innovation.



The Tools to Decipher Data

No matter the foe, the ultimate weapon today is knowledge. Knowledge of the business, of the market, of your customers and of the economy. Knowledge that is based on information from an ever-widening array of data sources—from your company's legacy data, to the Internet and third-party information providers, as well as ancient flat file databases.

This data, like the hieroglyphics that first confronted the code breakers, often comes in forms that are virtually unusable to end users. It must be transformed into a high-quality, usable format.

That's only the beginning, however. The business strategists and analysts must be given a set of tools with which this store of clean data is optimized to work. Only then can the strategists see the data as information and from that information gain knowledge.

Along this path to knowledge, the mission and the very identity of the IT community will be transformed, just as it was for the code breakers. Extracting the real value-added information from operational data becomes the new commitment for IT, which will be reinvented as a true strategic partner in the enterprise, uniting IT strategy with the goals of the organization.

The Tools to Succeed

"Isn't this what IT has been doing for years, uniting IS with the business?" you ask.

Well, consider this. For three of the last four years, the number one challenge listed in Computer Sciences Corp.'s annual survey of IS managers was aligning IS with corporate goals. If real progress were being made in this fight, then why would it continue to top the list of issues?

It is not that IT hasn't tried to carry out its mission. The problem may be that it hasn't had the complete set of tools needed to finally break the code of all that operational data, put it into a usable form and then provide users with the tools to analyze and exploit it.

Now that has changed. Not only are the tools available, but they are offered by a company that understands decision support is as much about the process of going from data-to-knowledge as it is about technology. It is also a company whose partnerships with hardware leaders like Sun Microsystems, Inc. give IT the most complete and integrated end-to-end solutions available. The company is SAS Institute, and it is looking to make heroes out of people like you in today's competitive battles. ■

Technologies That Make the Business Vision Work

"IT can serve as the coordinator among different business units," notes Frank Gillett, senior analyst at the Hurwitz Group in Newton, Mass. Because "only IT has the overall vision of data in the enterprise. IT can supply the technology to make the business vision work." And to *reinvent* IT.

These tools need to recognize the harsh realities of today's world. Realities like mixed hardware environments, incompatible data formats, tight-fisted IT budgets and requirements to scale up or down—and quickly.

"SAS software can be moved from one application to another as SAS customers move their applications," says Stephen Graham, vice president of software research at IDC Canada in Toronto. "SAS software is very malleable, which is something SAS users look upon as a strength."

Donna Rubin, data warehousing manager at Sun Microsystems, Inc., agrees. "SAS software has a history of being among the primary tools used before people knew the terms data warehousing and DSS (decision support systems). The company understands that IT needs to evolve a computing architecture over time, that you need a single view of the enterprise and not a bunch of incompatible datamarts."

Open, End-to-End Data Warehousing

The SAS Data Warehouse remains the only open, end-to-end data warehouse solution. While many users lean toward an end-to-end warehouse solution—63% according to one survey—many others prefer to mix compatible products into their existing solutions. SAS users can do either because SAS software was designed to be fully platform and database independent from the start. And SAS Data Warehouse solutions are *fully Web-enabled*. This means IT can distribute and share warehouse data across corporate intranets. Because of capabilities such as these, data mining is fast becoming the tool of choice for

exploiting the volumes of clean, scrubbed data IT has provided to the warehouse. It is an advanced technology that helps predict future outcomes and reveals trends and patterns from massive amounts of data.



The new IT commitment is to turn operational data into knowledge.

Plus a Complete OLAP Toolbox

SAS Institute also supplies a set of hardware-independent tools for OLAP (on-line analytical processing). These tools, which are fully integrated with the SAS Data Warehouse, allow users to create multiple views of business data to permit "what-if" modeling on a comprehensive scale. SAS OLAP tools, for instance, have enabled Dun and Bradstreet to deliver superior, targeted information to its 70,000 customers around the world.

Find Out More in Our Free White Paper... Including the Five Deadly Sins of Data Warehousing

Visit our web site at www.sas.com/dw to learn more about SAS Institute's integrated approach to data warehousing, OLAP and data mining.

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Click on the title to read the complete text or

request your free printed copy. In this white paper Bill Laberis, president of Bill Laberis Associates and former editor-in-chief of *Computerworld*, explores the "Five Deadly Sins of Data Warehousing." He also examines data warehousing's return on investment (ROI) as reported by 62 large corporations worldwide.



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The Business of Better Decision Making

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Integrated Warehouse Strategy Helps HMO Triple Business in Two Years

Health care providers and HMOs today have a lot in common with IT organizations. Each is being asked to provide increasingly higher levels of service and support without the benefit of big increases in funding. "Work smarter," it says on their marching orders.

Two years ago, Oxford Health Plans Corp. of Norwalk, Conn., set out to increase its base of 400,000 members and subscribers dramatically, while boosting the quality of service for individual members by an order of magnitude. The key to success lay in turning gigabytes of data from a mishmash of sources into knowledge that could be applied to increasing the quality of member coverage and care.

It was a daunting task, to say the least. Coverage providers like Oxford were feeling the same cost containment pinch that has gripped the entire \$800 billion U.S. health care industry. Plus, Oxford's internal systems were themselves a wild assortment of architectures that included IBM's OS/2®, AIX® and PC DOS, Microsoft Corp.'s Windows® and Sun Microsystems' SunOS™. Internal databases spanned the spectrum from Oracle Corp.'s ORACLE® and Sybase, Inc.'s SYBASE® to Microsoft's FoxPro®.

"We needed a universal decoder ring," recalls Scott Stratton, Oxford's director of medical analysis. "That's what SAS software proved to be."

Under Stratton's direction, Oxford developed a data warehouse strategy based on SAS Institute's warehouse and data mining solutions. The result? Oxford has grown to more than 1.5 million subscribers—and counting. More importantly, Oxford's world class patient management system is delivering subscriber services based on *anticipating* the medical needs of patients, not simply reacting to them.

For example, some HMOs collect data from a patient's emergency room admissions or from repeat hospital visits, and from that data, they prescribe a treatment plan. "But by then, patients have spun out of control," notes Stratton.

With SAS data mining tools now working in tandem with the SAS data warehouse, Oxford's analysts can examine patient data from far more

sources and incorporate third-party data as well. With this information, Oxford can prescribe a more comprehensive and preventative treatment plan than before, designed to keep hospital visits to a minimum. That benefits both the patient and Oxford.



Also, prior to installing the SAS data mining solution, it took a week and a half for Oxford to generate a standard profile of primary care physicians. With the SAS tools, Stratton says, Oxford can now incorporate "three times the data into the reports," which are generated in a day and a half. "The productivity is awesome."

Oxford received an additional benefit from its SAS implementation. It found that the SAS data mining tools "run like a champ" on Sun hardware, including the Ultra Enterprise 1, Ultra Enterprise 2, SPARCstation 5 and Sun's SPARCserver 1000. In fact today, Stratton says, "The Sun systems are our workhorses."

Oxford's early experience with the Sun-SAS software team has encouraged them to install the SAS Scalable Performance Data Server on Sun's super-fast SMP processor.

Of his decision to go with the SAS data mining solution, Stratton says, "We needed a cross-platform product that could scale, given our growth." And software that was truly hardware independent, given the mix of systems Oxford had at the start.

"We got all that and more with SAS software," Stratton says. "There are minimal worries about upgrades. Their tool kit is unmatched. SAS Institute has a great knowledge of the workings of the entire system. It just makes it easier to integrate everything." ■



SAS Institute Inc.



Sun Microsystems, Inc.



The more insight you have into what others are doing, the better you can plan and implement your own Internet policies

Until now there have been relatively few accounts of Internet policy benchmarks and trends. That's what makes this "best practices" resource invaluable to anyone who must implement a practical Internet policy or enhance one already in place. This report was pre-released and beta tested by CIOs for clarity and completeness. The result is a reference tool that you can implement within days of reviewing. As a value-added bonus, a sample memo and sample policy guidelines have been appended to the report.

Save \$200. As a special offer to *CIO* and *WebMaster* readers, you are invited to purchase "Maximizing The Internet: Policies, Procedures & Best Practices" for \$395. This is a savings of \$200 off the regular price.

"MAXIMIZING THE INTERNET: POLICIES, PROCEDURES & BEST PRACTICES" EXPLORES...

- What kinds of companies have implemented corporate Internet policies and why? What do such policies cover? How are they enforced?
- Who is responsible for setting and enforcing policy? What are the challenges facing companies that implement Internet policies? How are such policies communicated?
- Who is responsible for designing, developing, and managing corporate Web sites? How are companies currently using their Web sites?
- How does annual revenue and size of company affect Internet policy making and procedures? Are different industries doing different things?
- Is monitoring effective? What sanctions have been imposed for improper use of the Internet?

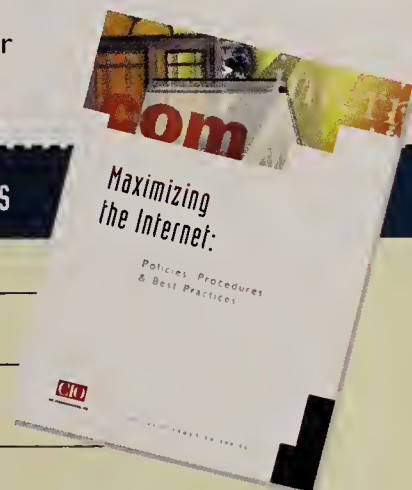


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Trendlines

Humphrey, who developed a PSP textbook and course in 1995, says the extra effort required to plan a project in advance using the methodology has paid off for PSP graduates, with quality improvements of factors from five to 10. But training the programmers isn't enough. Humphrey also advises that software project managers must change their tune from demanding large quantities of quickly produced code to emphasizing the need for better-quality code. SEI has developed a separate four-and-a-half-day course for software project managers.

With methodologies for overall project management and individuals' work, SEI has two legs of the software development tripod in place. Building the third leg, the coordination of individuals in programming teams, is Humphrey's current project. The Team Software Process (TSP) will address that issue. "When you train professional musicians to play their instruments flawlessly, you still have to train them to play with others in a symphony," Humphrey explains. Still under development, TSP aims to create harmonious teams of PSP-trained programmers who together can strive for the highest project capability maturity levels.

For more information, contact SEI at 412 268-5800 or visit its Web site at www.sei.cmu.edu.
—Peter Fabris

Relationship Matters

I.T./BUSINESS ALIGNMENT CIOs engaged in building a strong IS organization discover early in the process that technology is only a small part of the equation. Finding good workers, gathering benchmarking data from IS leaders (such as those profiled in this issue) and getting IS folks to think in business terms all factor into the task at hand. But it also helps if the CIO and the CEO get along, according to "Top Executives' Views of Technology and Their IT Organizations," a recent study from International Data Corp., a sister company of CIO Communications Inc., in Framingham, Mass.

"IDC has found a strong correlation between the effectiveness of the IT organization and the relationship between the CIO and the CEO," notes the study, which surveyed 283 top executives across three vertical industries: finance, manufacturing and retail/wholesale. "We suspect that this relationship, if it is close, permits the CIO to develop the IT organization into a service that delivers competitive

advantage for the company, thus enhancing the careers of every IT professional in the organization." In other words, you don't have to be regular golfing buddies, but a certain amount of mutual esteem will help IS function as a business partner.

CIOs who report to the CEO have the best chance of creating influential IS organizations, says Thomas D. Oleson, IDC's research director of custom information access, who co-authored the study with analyst Seana Dowling. "One of the things that comes through very clearly is that if the IS organization is to be effective, it is critical for the CIO to be effective," Oleson says. "And for that to happen, he or she must report to the CEO. Once they get down into the organization, IS loses influence and impact."

He adds that CIOs must be careful about the influence over IT decisions exercised by business unit executives. Although a certain amount of ongoing partnership and discussion between IS and lines of business is vital, too much business influence can erode IS effectiveness, says Oleson. "When the IS organization has more influence and control, it provides more usable information to the business units," the study reports. Oleson notes that CIOs would do well to maintain a balance of power between IS and the business unit heads.

—Carol Hildebrand



Measuring Stick

IDC asked CEOs how they measure the effectiveness of their IS organizations. The top five responses are as follows:

Informally compare IT with other companies through public information

Initiate a formal benchmark of the IT department with other companies

Have no plans to assess the IT department

Already completed an assessment of IT

Aren't sure how to go about assessing the IT department

SOURCE: IDC'S GLOBAL I.T. SURVEY, U.S. EXECUTIVES,



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Trendlines

SNEAK PREVIEW

I.S. LEADERS

Patricia M. Wallington is one of the 12 most influential IS leaders of The CIO Decade. Learn who the others are in *CIO's* 10th Anniversary issue, coming Sept. 15.

“Over time, the CIO position has moved from managing to leading—from a technical orientation to an integrated view of the business opportunity. It has moved from tactical to strategic. But you can’t be all long-term and forget the short-term. You can’t be all strategic and forget the tactical. You can’t be all leadership and vision and forget the managerial and administrative pieces of the role.”

—Patricia Wallington, corporate vice president and CIO, Xerox Corp.

Where Were You 10 Years Ago?

THE CIO DECADE

READER SNAPSHOT

Robert Walker

VP and General Manager of the Professional Services Business Unit in Hewlett-Packard Co.'s Software & Services Group, Palo Alto, Calif.

Career Moves: 22-year HP veteran; four positions in the past 10 years, most recently as CIO

Years Reading *CIO*: 10, “off and on”

Ten Years Ago: “I was in our U.S. field organization. My responsibilities included the IS activity for our U.S. sales and customer support operations as well as shipping and logistics.”

Evolution of the CIO Role:

“It’s related to the whole role of technology, which has gone from point impact—where there are a few isolated applications and functions that use IT—to being very pervasive. Now almost everything we do is related to technology. That has translated into a consciousness on the part of senior management and others of how important the whole IS function is.”

Lessons Learned: “We’ve learned to make sure there is a real value proposition in the eyes of the people who are going to use [the technology]. We had a very major system that we struggled with for a long time. Honestly, it was working, and we got very close to rolling it out. But we decided not to because we realized that we’d lost track of what makes a good implementation. We were making too many changes. I contrast that with the way we’ve rolled out a very common desktop environment for our personal computers, which is really a harder task to accomplish because everyone’s ‘empowered.’ But the value proposition was very obvious. We’ve gotten much better at connecting with the users.”

Most Interesting Office Mementos: “I have a seagull from when I left one of the business units to take a more corporate position. The thinking is that corporate people are like seagulls: They come into town, leave a mess and fly away. It’s a reminder that we’re there to help the business lines do their job better, not the other way around.”

—Derek Slater

IN SEPTEMBER, we’ll celebrate the 10th anniversary of *CIO*. In anticipation of our 10th Anniversary issue, we’ve been asking readers to look back and tell us where they were in 1987 and how they ended up where they are today. We invite you to tell us your story when you visit our Web site at www.cio.com/snapshots/.





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Appearing
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of **CIO**

Inside the Agile Data Center

How Leading Companies
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Is your data center agile and adaptive enough to continue to support your business computing needs in the future? Devising technology strategies that work today while affording investment protection for tomorrow has become a central IT issue. IT task forces are asking: What are the underlying technologies upon which to build an agile data center? Which solutions will meet their current enterprise computing needs and be able to take them into the 21st century? Who can give them the performance, affordability, scalability, reliability, application breadth, service and support needed to run their business?

More organizations are turning to the Intel

Architecture. Not just at the desktop and workgroup server level, but for mission-critical data center applications that just can't quit. And it has a lot to do with scalable manageability to support more and more users, great performance and value for global competitiveness, and suppliers with the experience and commitment to make it all work for you.

So look for this supplement. See how forward-thinking, agile organizations are preparing for tomorrow's challenges now. You may want to keep it and pass it on to your team. It will give you real life examples of companies that are running their business on the data center architecture that has an eye on the future.

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TOP I.T. PERFORMERS

*Excellence is the product
of hard work and vision*

BY CAROL HILDEBRAND



ANYBODY WHO'S EVER BOUGHT A HOUSE KNOWS the frustration of trying to find something that fulfills every domestic requirement. If the furnace is in good shape, then the kitchen's dreary green cabinets cry out for complete renovation. You pay your money, and you compromise. Still, every house hunter dreams of a home with everything—kind of like a CIO with visions of designing a responsive, innovative IS organization. However, just as every prospective

buyer knows that very few houses meet “user” needs on every level, IS executives face quite a challenge in building IS organizations that have everything from a good technical infrastructure to seamless alignment of IT with business goals.

But the best organizations do it. By using good management skills, business sense and innovative technology, smart companies can build inventive IS groups that contribute to the corporate bottom line. This year, the annual CIO-100 issue honors such top-performing IS groups, selected by their peers.

Excellent IS organizations aren't built in a day, and even the best groups must face sudden technical overhauls and organizational renovations. This year's CIO-100 companies built their IS “dream houses” by achieving excellence within our five categories of IS best practices.

INFRASTRUCTURE MANAGEMENT

Although making sure the plumbing works is the least glamorous and most basic task facing IS, it cannot be ignored. Like home buyers, users may not give much thought to the foundation, but they'll sure yell if it collapses regularly. At United Services Automobile Association (USAA), IS achieved excellence in the infrastructure management category with its high-performance data center and network uptime (see “Ensured Stability,” Page 62). The information executives at USAA take care to provide reliable, up-to-date PCs and network access; set and manage sensible technical standards; and pay close attention to the business costs of running their company's infrastructure.

INTERNAL CUSTOMER SUPPORT

A superior IS group works on keeping its customers happy. The IS group at Elf Atochem North America Inc. is one such organization that excels at this task (see “Service Ace” Page 72).

Its customers are very satisfied with the services it delivers, including an efficient help desk and effective technical training for users. Elf Atochem CIO Robert M.

Rubin stresses ongoing communication with business partners to make sure his IS organization provides world-class support and rolls out applications on time and under budget.

INTERNAL OPERATIONS

Running IT smoothly requires that the IS executive hire and retain skilled help, in addition to motivating those same staffers to produce inventive solutions, something the IS folks at Kraft Foods Inc. do through their innovative recruiting program and employment incentives (see “The Arts of Kraft,” Page 82). CIOs adept at this best practice also must pay attention to budget, risk and project management skills, as Merck & Co. Inc.'s Charles Popper did by adapting the company's drug development process but adjusting it to fit IS's needs (see “A Taste of Its Own Medicine,” Page 86).

IT AND BUSINESS ALIGNMENT

Once an IS group has built credibility by paying careful attention to fundamental skills, the door is open to true strategic partnering, as it is at The Chase Manhattan Corp. (see “Banking on Bonds,” Page 94). CIO Denis O'Leary and his team use a novel organizational structure to make sure IS remains in synch with Chase Manhattan's business goals. Such organizations understand not just technology but business goals, and those organizations use technology to make important contributions to the bottom line. For example, The Charles Schwab Corp. is coining money with e.Schwab, which enables consumers to both buy and sell stocks over the Web. The strategy of information technology

supports business goals, even though the goals themselves may change rapidly in today's competitive environment.

METHODOLOGY

Picking the Winners

How did we find these companies? Simple enough. We asked you.

CIO surveyed 3,000 high-level IS executives across 10 industries for their opinions of innovative IS organizations. Respondents could nominate up to five companies, including their own, and were asked to rate their choices in each of five best practices categories: infrastructure management, internal customer support, internal operations, IT and business alignment, and innovation and learning. The survey was administered and tabulated by IDG Research Services Group, a sister company of CIO Communications Inc., in Framingham, Mass.

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Espionage, sabotage, destruction, subversion, conspiracy, larceny—the latest Hollywood epic? No. Just another day in the life of your internet/intranet-based network.

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*Source: 1996 Information Week/Ernst & Young Information Security Survey

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INNOVATION AND LEARNING

These IS groups have learned to make substantial investments in managing information and knowledge through collaborative technologies such as intranets and a culture that encourages information sharing. CIO-100 honorees, such as the United States Department of Defense, have invested in systems—both technical and organizational—that encourage lifelong learning and have created an institutional memory for lessons already learned (see “Armed With Intelligence,” Page 104). **CIO**

Senior Editor Carol Hildebrand can be reached at cjh@cio.com.

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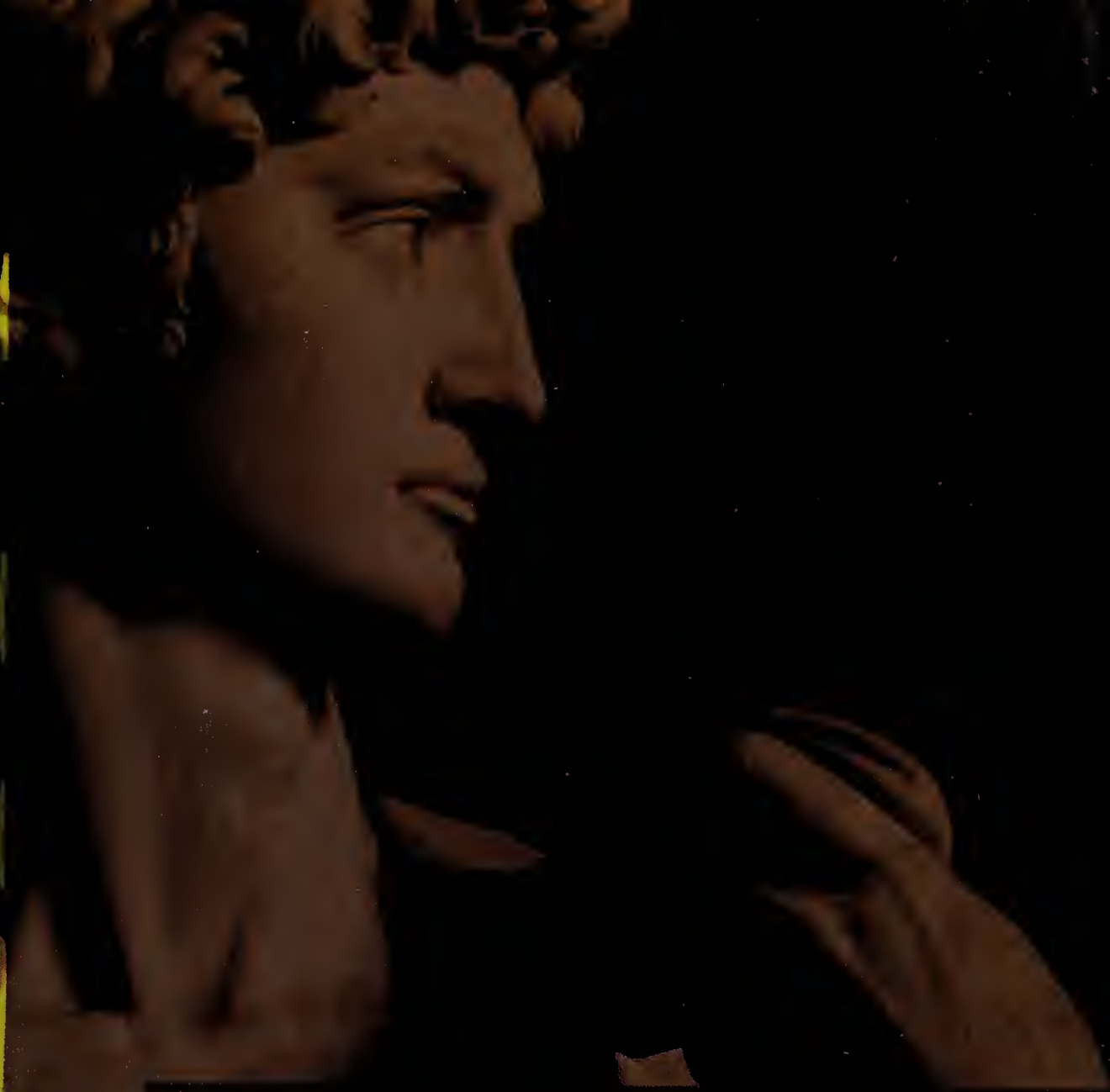
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Bethesda, Md.*

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A portrait of John Gerdeman, a man with dark hair, wearing a white dress shirt and a dark tie with a red and white paisley pattern. He is smiling slightly and has his hands clasped in front of him. The background is a blurred blue and white.

MCI's John Gerdeman
names technical
reliability, good
service and strategic
business partnering
as his top three goals.

CIO 100 OVERVIEW

The Nature *of* Excellence

IS organizations that receive the CIO-100 award lead in building systems, serving their companies and creating genuine business value

BY CAROL HILDEBRAND



HERE'S LITTLE DOUBT THAT TECHNOLOGY IS GOOD FOR the corporate soul; indeed, most organizations would be consigned to purgatory without it. But IS organizations have never found measuring the value of their work to be easy. While the bulk of CEOs equate IS performance with using technology to achieve business goals, this intangible business/IS link is difficult to quantify. Moreover, the CIO also must satisfy simultaneously the more mundane requirements of providing cost-effective, reliable technology and service if the IS group is to succeed.

The conflicting demands of running an efficient technical infrastructure and creating an IS group adept at business practices frequently evoke a fractured response from IS, says Fred Magee, vice president and research director at Gartner Group Inc. in Stamford, Conn. "Who are they going to

be, Dr. Jekyll or Mr. Hyde?" he asks. "Providing efficient, stable, secure technical structure and support has very little to do with business effectiveness, with its emphasis on the creation of new products, expansion of markets and the integration of new customer channels."

Still, CIOs directing high-performing IS groups have found a way to reconcile the warring masters of technical efficiency and business innovation. "Attaining Top-Level IS Performance," a report by consultants Mary Silva Doctor and Richard W. Swanborg Jr. (from Omega Point Consulting and ICEX Inc., respectively), examines the practices of 20 IS organizations in Fortune 500 companies. Swanborg and Silva Doctor suggest that

IS groups must ascend a pyramid of capabilities. Before reaching the highest level, at which an IS organization creates business value, an organization must first deliver a sound technical infra-

"You're not going to get a lot of thanks for getting the basics right."

-RICHARD SWANBORG JR.

structure as well as build competence and credibility through excellent service (see "Pyramid Power," this page).

Excellence on all levels is difficult to attain, but this year's honorees have succeeded in bringing IS innovation to their companies by paying attention to best practices in infrastructure management,

internal customer service, internal operations, IT and business alignment, and innovation and learning. Our five categories of best practices fit nicely within Swanborg and Silva Doctor's three-tiered pyramid.

Silva Doctor points out that most IS organizations function at the first level of performance, delivering just the basics of IS support. But the CIO-100 organizations go forward and succeed by striving for a delicate equilibrium among infrastructure, service and business value creation. It's a constant struggle of balancing often-conflicting needs, but top-level IS groups have learned the skills needed to provide the basics while still functioning as business consultants for the enterprise.

Swanborg says that when they talked to CIOs of Level 3 IS groups, the level at which IS organizations make a consistent and distinct contribution to the business, the two consultants found that even the high flyers started at the bottom. "They all said the same thing. They spent a lot of time working with the demands of infrastructure management," he says. "You've got to have the

Pyramid Power

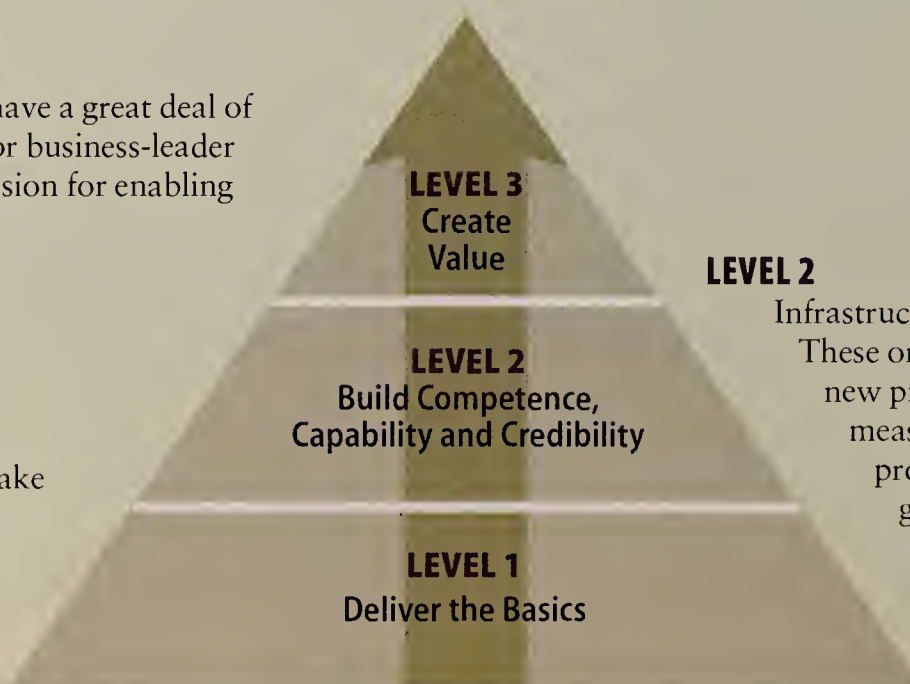
Evolving IS organizations rise through ever-more valuable skill sets

LEVEL 3

These organizations have a great deal of credibility at the senior business-leader level. They have a passion for enabling business through IT.

LEVEL 1

These organizations take what they've got and work to optimize it. There is a strong emphasis on infrastructure.



LEVEL 2

Infrastructure has stabilized. These organizations initiate new processes and implement measurement and quality programs. They're very good at delivery. There's commitment to change and improvement.

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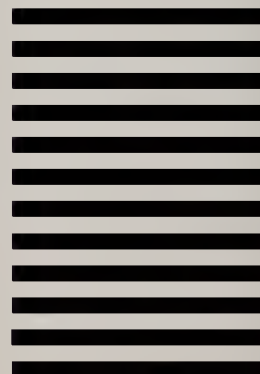
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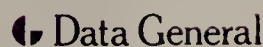
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base down to work your way up the pyramid. And by the way, you're not going to get a lot of thanks for getting the basics right."

John Gerdelman, president of networkMCI Services, the IS arm of MCI Communications Corp., in Washington, says his operation works on those three levels. "Reliability is the foundation," he says. "If the data center isn't operating and the network isn't up, you don't get to get in there and talk about innovation." Next in importance, he says, is making sure that business users get dependable service. A project development team, for example, commits to delivering projects on time and on budget. "If you have a [scheduled] release date of May 1, you should know in January if it's going to be on time or not" and communicate that information accordingly, Gerdelman says. "Innovation is last," he says. "If you do the first two right, you get to play in the final arena, which is where people have the most fun."

It's just like Mom and Dad told you: Before you can go out to play, you've got to do your homework. And if you want to build a multilevel IS organization, you've got a lot of homework to do.

LEVEL I A RELIABLE INFRASTRUCTURE AND FLEXIBLE ARCHITECTURE

THIS, THE LEAST GLAMOROUS LEVEL of IS performance, cannot be ignored, says Silva Doctor. "At the end of the day, the expectations of an IS organization are still that they will run systems," she explains. "Until you're doing that, it's very hard to move ahead." But execution is a different matter from expectation. Consider that IS must build an infrastructure that users can depend on, but it also must be able to accommodate the latest technology at a cost that satisfies the budgeteers. After all, nobody wants to allocate money for a project that has no quantifiable payoff.

There's an inherent difficulty in building an infrastructure that's simultaneously scalable—implying that frequent

upgrades or new technology additions are to be expected—and as stable as a rock, says Robert Walker, former vice president and CIO at Hewlett-Packard Co. in Palo Alto, Calif. (Walker's current position is vice president and general manager of the Professional Services Business Unit in HP's Software & Services Group.) "It's like running a marathon and partway through needing a heart-and-lung transplant," he says. "That is really the job we face in infrastructure."

Most CIOs rely on metrics such as tracking network uptime to measure infrastructure reliability. But many experts say that building a successful infrastructure also requires input from the business side. After all, if a business unit decides that a particular tool is strategic, IS should be involved at the outset in order to build appropriate capabilities into the infrastructure. Otherwise, you have the classic user/IS bind: The business folks complain that IS isn't responsive, while IS people complain of being asked to deliver immediately something that takes months to execute. "Ultimately, the toughest issue is getting the business to understand the infrastructure," says Roger Walters, vice president of strategic technologies at management and technology consulting firm Booz, Allen & Hamilton Inc. in McLean, Va.

IS groups that work from a clearly articulated business vision run the best chance of building an infrastructure that answers business needs, says Jeanne W. Ross, research scientist at MIT's Center for Information Systems Research in Cambridge, Mass. And, she adds, the vision had better be more than the standard mission-statement pabulum. "Being one of the two top companies in a market isn't a vision; it's a goal. It tells nothing about what IT will need." Ross says



companies that can analyze the business elements they will need also will be able to make intelligent decisions about funding corresponding infrastructure projects. "Some companies need good economies of scale, while others need good informa-

"It's like running a marathon and partway through needing a heart-and-lung transplant. That's really the job we face in infrastructure."

—ROBERT WALKER

tion flow," she says. "Different kinds of businesses require different kinds of vision, both IT and corporate."

For example, financial services giant Fidelity Investments' business essentially is to sell information—so system failure is not an option, says Steven Akin, president of Fidelity Investments

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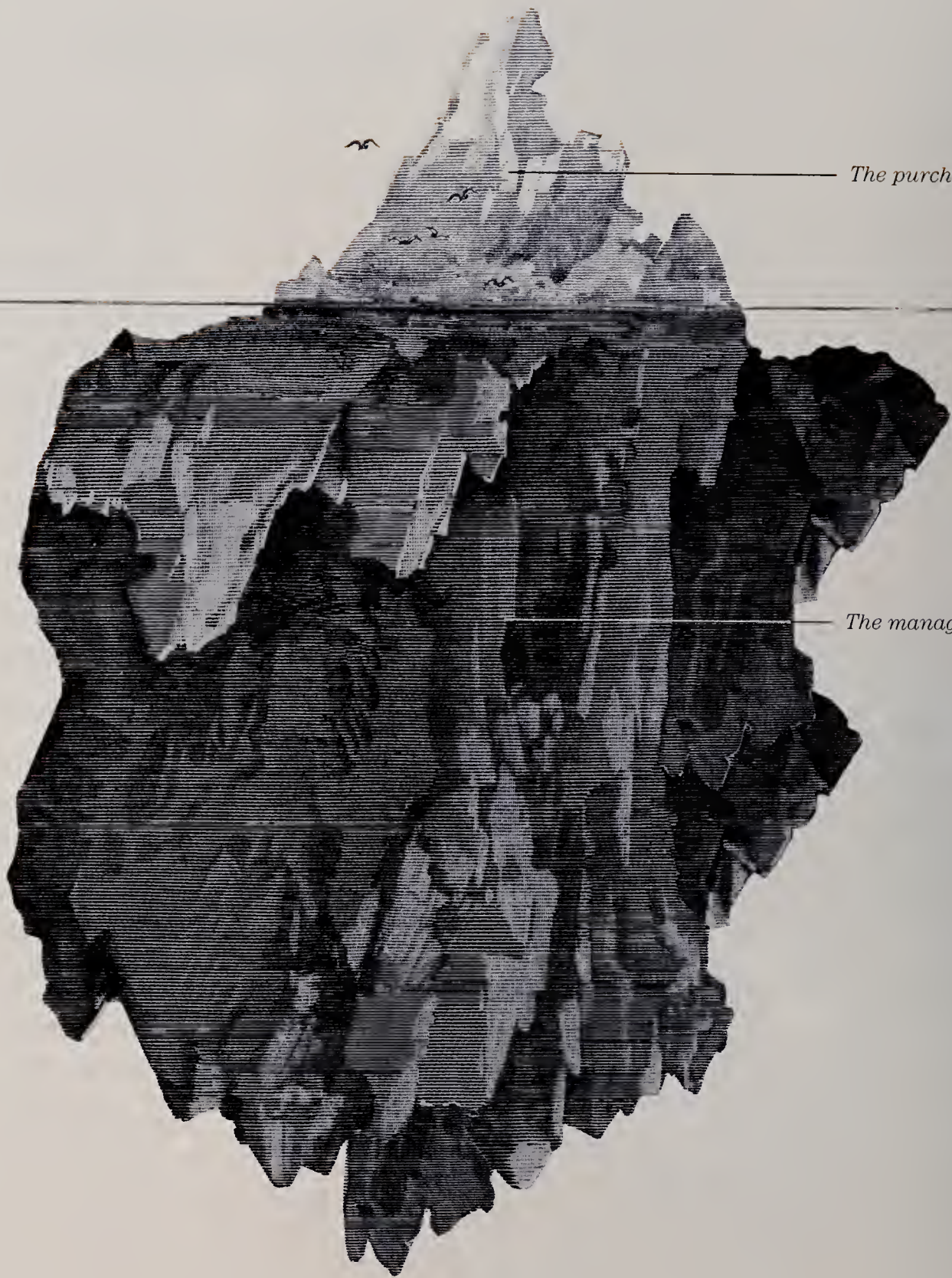
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Systems Co., Fidelity's IT division. Consequently, his network operates at what he calls a "99.9-plus" level of reliability. "We built our whole system with contingency and redundancy in mind," he says. "We've got two feeds for telephone lines and have enough network capacity to spare should some part of it crash. When there are major activities or disasters in one geographic region, we're able to move traffic around very rapidly to accommodate."

Carolyn G. Osborne, former CIO and now vice president of information and telecommunications services at Carolina Power & Light in Raleigh, N.C., has spent the past two years revamping the utility's infrastructure. She says the company's understanding of competitive changes brought on by deregulation caused her to revamp completely the architecture from a mainframe environment with its disparate "islands of information" to a companywide network-centric client/server model. The project cost millions, she says, but senior management's awareness and support of a common companywide architecture "helped us bite the bullet and make the change. You need to look at the whole work process and understand what advantages you have."

But what about cost-effectiveness? Here, both CIOs and experts contend that uniform systems are vital. "Once you get a standard architecture and platform, companies can cut down on the cost of support and improve quality of service," says Walters. When IS has a fixed menu and a set number of systems they know they must support, the need to service many disparate technologies—with the attendant cost of paying many disparate service personnel—will disappear. Moreover, companies can plan to build cross-functional systems such as data warehouses without worrying whether the marketing department's LAN will be able to speak to its counterpart in engineering.

Charles M. Paulk Jr., managing partner and CIO at Andersen Consulting in Chicago, agrees on the importance of standards. "We have a constant challenge of updating technology while staying in an acceptable cost window," he says. "We believe standards are key for that."

When a new standard is needed, his group puts together a global IS research

team to identify a standard, which is then reviewed by the IT and business community at large. "If it doesn't get adequate buy-in from the rest of group, we'll reassess," says Paulk. If he tried to dictate standards, he says, they'd never stick.

LEVEL 2 CONSTRUCTING CREDIBILITY THROUGH SERVICE

THE SECOND LEVEL OF PERFORMANCE raises the value bar, says Silva Doctor. Once the technical infrastructure has been stabilized, IS must strive to satisfy users' need for superior technical support and on-time project delivery. Silva Doctor says organizations at Level 2 "have an unrelenting drive to meet or exceed expectations," and as a result, many of them develop a new focus on hiring and retaining talented help.

Of course, IS organizations need to get some help from the business folks in order to satisfy in-house customer expectations, particularly since funding constraints mean that not every item on a business wish list can be implemented.

Achieving excellence is a matter of arriving at a mutually agreeable level of cost versus service, says N. Frank Barbee, manager of information technology at Phillips Petroleum Co. in Bartlesville, Okla. "I could drive costs very low and have lousy service," he points out. Barbee says that service-level agreements between IS and its business-unit clientele serve a twofold purpose. First, they help Barbee's group refocus from its traditional cost and efficiency focus to one of customer support; second, agreements provide measurable benchmarks that clearly reveal to all parties whether IS is living up to expectations. "By measuring our performance against a service level, we make sure that everything we do is a value-add," says Barbee. "And we do it by getting the customer to measure for us."

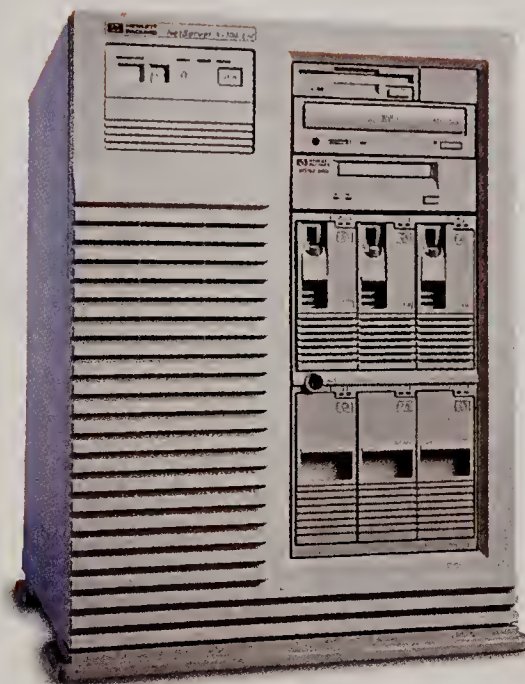
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Frank Barbee must balance service levels and cost concerns.

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CIO 100 OVERVIEW

vice levels, says Barbee, IT costs will increase. He shows business people a rising customer value curve along with the IT cost curve. "If the value rate is going

sider intangible motivators, Glaser says. "What is it that makes a person look forward to going to work?" he asks. "The

answer is, 'I really like the tasks that I do; the work is interesting and valuable. I really like the people I work with, and I'm proud of the place where I work.' That's quite different from salary stuff, and you have to pay attention to both."

MCI's Gerdelman agrees. For example, he organizes an annual getaway for top-performing IS employees, similar to those trips traditionally awarded to salespeople. But while the location is just as enticing as that of a typical sales junket (the sun-

washed beaches of Puerto Rico, this year), the content is a far cry from that of a sales meeting. Gerdelman says IT folks tend to be less social than salespeople, so rather than schedule lots of networking schmooze time, he plans roundtables hosted by top MCI executives, such as Bert C. Roberts Jr., chairman of MCI Communications. "It's an investment in time for these executives, but it says that folks in IT and networks are as important as top salespeople," Gerdelman notes.

Another characteristic of Level 2 IS organizations is that they involve higher-level project management skills. Delivering projects on time and within budget becomes a key measure of success. Carolina Power's Osborne focused on that expectation when she reorganized her entire IS group along with her infrastructure. The new project mandate was that 90 percent of projects should be able to be completed in 90 days. Osborne needed people who could work in smaller groups and finish faster, instead of people with narrow, deep levels of expertise who worked for years on a single, "big bang" project. She

replaced 20 percent of her workers and hired people with a broader array of skills such as project management and communications. The project management emphasis really paid off when it came time to talk to the business side of the house, she says. "It's like a relay race. Successful teams win because they practice smooth handoffs, not because they practice sprinting," she explains. "If you get really good at handoffs, you're going to win."

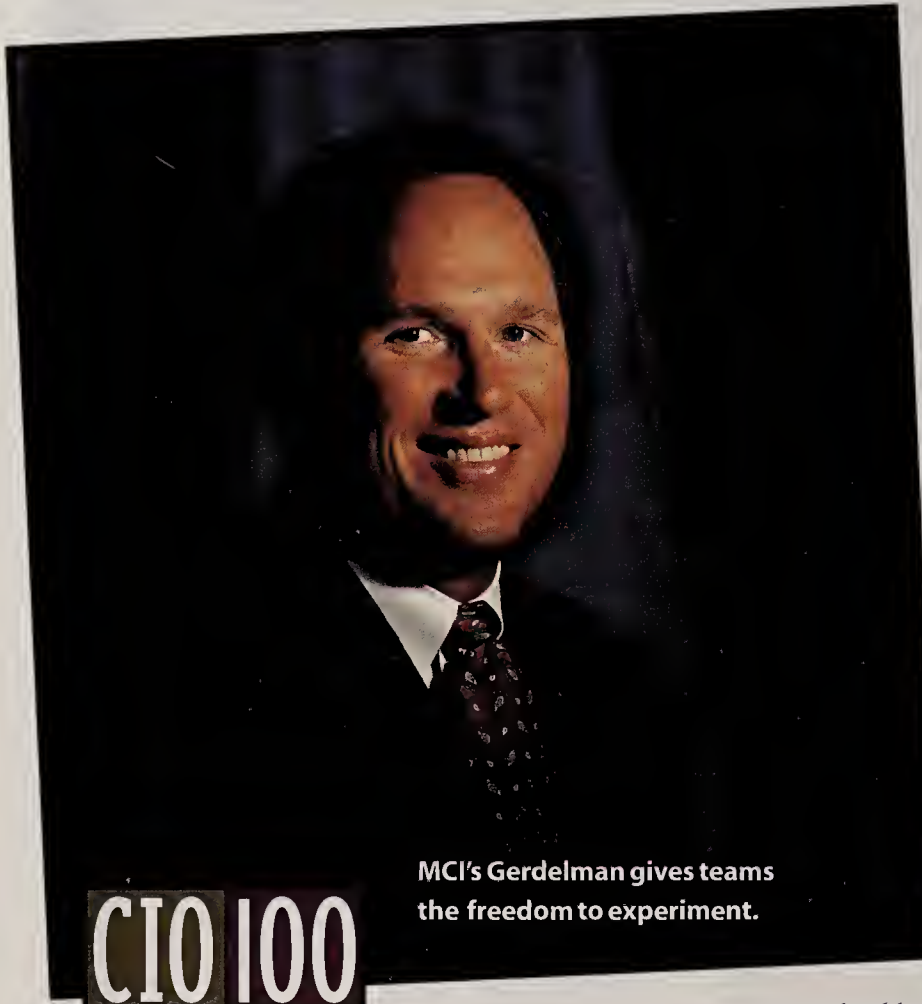
LEVEL 3

CREATING VALUE THROUGH I.T./BUSINESS COLLABORATION AND LEARNING

INFORMATION SYSTEMS groups operating at the top level create value for the business. They are characterized by one word, says Silva Doctor. "Passion. That's really the only way to describe it. They have a passion for using technology to enable business change." Because that passion for value translates into business payoffs, these groups have earned credibility with their business peers and are viewed as partners rather than suppliers.

"To be really effective, [an organization] needs to have credibility," says Hewlett-Packard's Walker. He tells of a conference where someone suggested a typical IT-type definition of credibility: "He said it was a mathematical product of two terms. One is empathy, that is to say, understanding what users need and being able to convey that understanding. The other is performance, or delivering on what users think they ought to be doing. Mathematically speaking, if either term is zero, you have no credibility."

CIOs at Level 3 IS organizations cultivate the partnership between IS and the business. At The Gillette Co. in Boston, Vice President of Corporate Information Technology Patrick J. Zilvitis makes sure business executives lead new technical programs, while the IS group names a project manager to work with them. Zilvitis himself makes his share of sales calls and pays visits to Gillette plants. "I'm both a missionary and an educator.



MCI's Gerdelman gives teams the freedom to experiment.

up at a steeper rate, [business executives] will leave me alone," he says. This year, his group is revamping an IT billing system to itemize costs and services. "If there's some service in there that's of no value to the business unit, they can then identify it and we'll remove [the service]. That way, when the president wants to know what IS costs are all about, [the group will] know—and understand."

Excellent service requires excellent personnel, as anybody who's had a surly waiter ruin a meal can attest, and IS staffing is no different. "There's no substitute for talent," says John Glaser, vice president and CIO of Boston-based Partners HealthCare System Inc., which was formed in 1994 as a result of the joining of Massachusetts General Hospital and 1997 CIO-100 honoree Brigham and Women's Hospital. "You need really good people who are smart, have integrity, are passionate about work, and both respect and work well with colleagues." But finding and keeping good help is an ongoing challenge for CIOs, who often find themselves in bidding wars for people with the hottest technical skills. One must also con-

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I can't apply technology to improve business environments unless I understand both," he says.

At Eli Lilly and Co., Vice President and CIO Tom Trainer involves senior business executives at the earliest stages of IS strategic planning. For example, at one offsite meeting, top IS executives heard updates on the business—not IS—strategies from the heads of Eli Lilly's various business units, from research to marketing. "We had five of the top 15 executives in the entire company," says Trainer. "They spent the day giving us strategic updates, and then we participated in panels, playing back what we heard from them." So thorough an indoctrination in business thinking helps IS executives internalize those goals and makes it easier for them to turn strategies into true business applications, he says.

Creating value also means Level 3 IS groups have an appetite for constant innovation and learning, which helps them identify and communicate new ideas for making money with technology. At this level of IT practice, the focus shifts from the efficiency-oriented measurement of the lower levels to more intangible benchmarks, says Larry Prusak, managing principal in knowledge management at IBM Corp.'s Consulting Group in Boston. "[Value is] usually measured by narrative or story rather than hard numbers because that's

"I'm both a missionary and an educator. I can't apply technology to improve business environments unless I understand both."

-PATRICK ZILVITIS

how innovative ideas are born," he says. "Innovation occurs in the spaces between workers and work, and between functions. The best innovations



HP's Robert Walker: Learning comes from accepting different points of view.

slowly leak between boundaries." He cites 3M Corp. as a company "that allows quite a bit of time for somebody to work on whatever projects they want to. Innovation cannot occur without some sort of reflection on learning."

HP's Walker says that building innovative thinking and learning into the IT organization is much easier if the rest of the company also works the same way. "HP fundamentally has a culture that encourages innovation and learning," he says. "A lot of it comes from our scientific and engineering bent." Walker says the creative process requires diversity, different points of view and inclusion, the notion that all perspectives are legitimate and so can be discussed on merits. "At the best HP organizations, when you have both, it's wonderfully creative," he notes. Partners' Glaser would add one more thing to create the ideal environment for learning: the freedom to make mistakes. He gives his top performers lots of freedom to experiment. "That means that sometimes they'll trip up; but to experiment, you have to take risks and recognize that periodically these things will

blow up," he says.

When it comes to risk, an IS group faces the same problem journalists do. Just as writers are only as good as their most recent story, IS groups are only as good as their most recent really cool application. With such pressure, it's not surprising to see IS reputations go from hot to shot in a short time. CIOs constantly must remain on the lookout for the weighty issues that can disrupt their groups' hard-earned balance of competencies. For many IS executives, that means recognizing when to change the focus from higher-end partnering skills to Level 1 or 2 issues, says Silva Doctor. "CIOs need to recognize when they should move between particular levels," she says. "If one of the key initiatives of the year is around the delivery of a system, that's where your attention should be." IS organizations that function as true business partners should be proud of their achievement and that's as good as it gets. **CIO**

Senior Editor Carol Hildebrand can be reached at cjh@cio.com.

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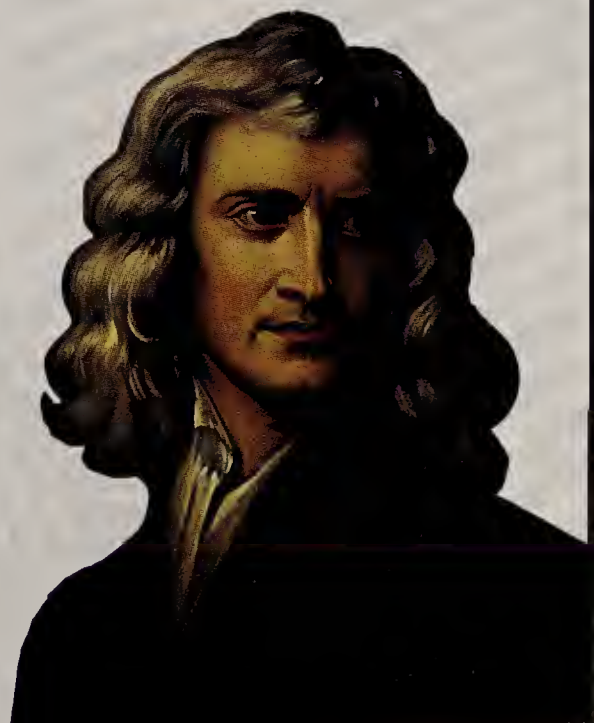
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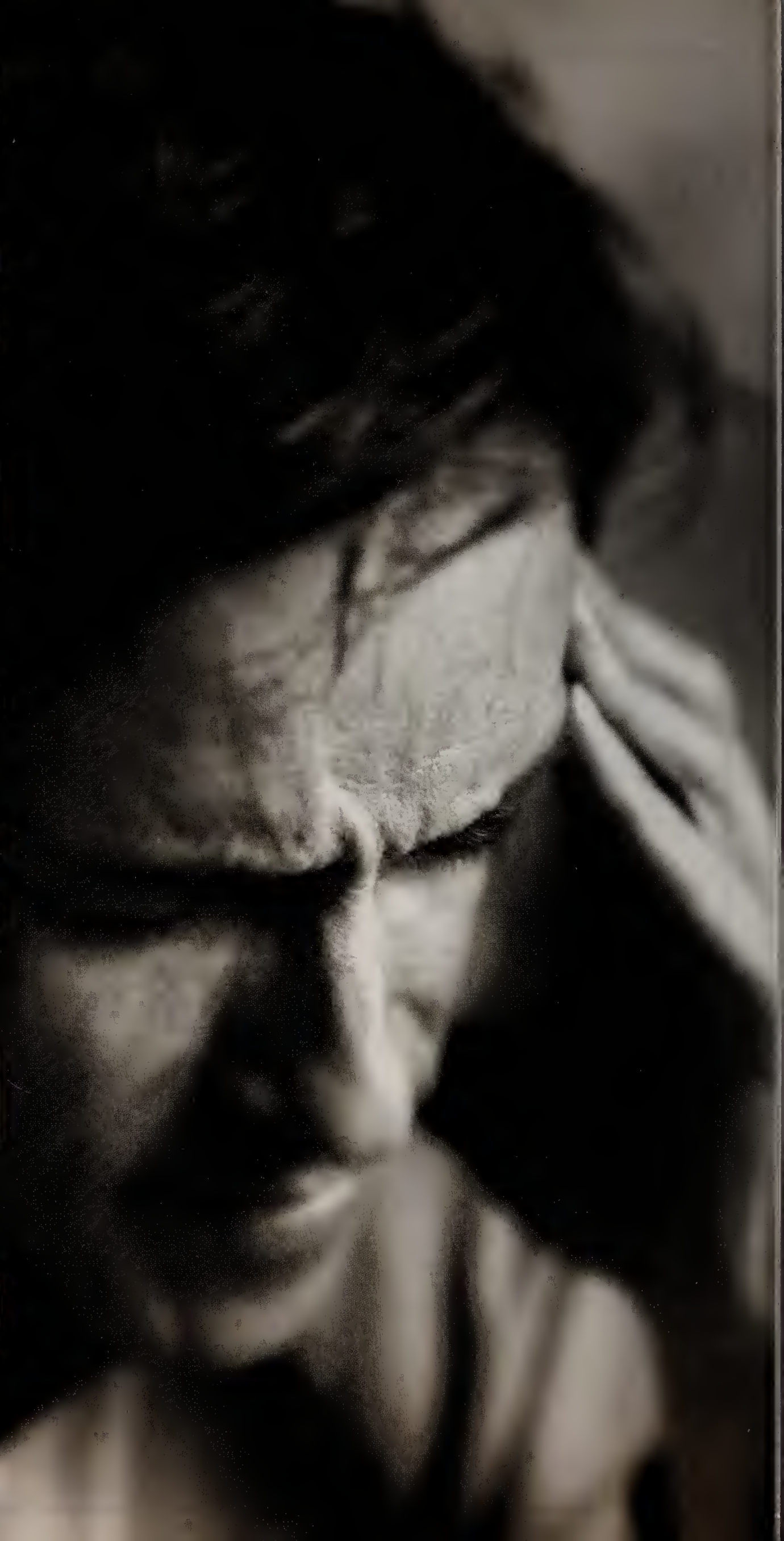
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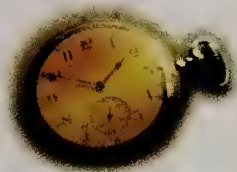
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CIO 100

TOP I.T. PERFORMERS

Ensured STABILITY

Can you upgrade your infrastructure without affecting your company's productivity? USAA answers its own \$105 million question.

BY TRACY MAYOR

W

HAT'S TO LIKE ABOUT INFRA-structure? It's complicated, expensive, difficult to explain and plagued

by unfinished standards and volatile products.

Its business benefits can't be quantified, and—if you do it wrong—it's nearly impossible to fix. It's enough to bring on apoplexy in the average CIO.

"The hardest decisions are infrastructure decisions," says Donald R. Walker, a retired U.S. Air Force brigadier general and senior

Best Practices for Infrastructure Management

INFORMATION SYSTEMS GROUPS ACHIEVE infrastructure success in the following ways:

- ▶ Building an infrastructure that's technologically up-to-date and adaptable for the future
- ▶ Maintaining a high percentage of uptime of both the data center and networks
- ▶ Supporting a work environment where a majority of workers have access to PCs and networks
- ▶ Setting good standards and establishing sound management practices
- ▶ Controlling the total cost of ownership across the systems





At USAA, George McCall, Donald Walker
and Reggie Williams (left to right) oversee
a model infrastructure.

INFRASTRUCTURE MANAGEMENT **CIO100**

vice president and CIO at United Services Automobile Association (USAA) in San Antonio. "In and of themselves, there's no return on investment. There isn't an ROI until you get a business application that uses the infrastructure."

Yet infrastructure is the piece of the technology pyramid managers can least afford to avoid. If it doesn't work right, everything that rides on top of it—utilities, applications, mission-critical databases, integrated telecommunications functions—is doomed as well.

Walker has a healthy respect for wires and plugs. He and his information services group preside over a massive infrastructure that each day processes 350,000 phone calls and 16 million computer transactions for USAA, an insurance and diversified financial services association. USAA's technology structure encompasses 7,600 dumb terminals attached to IBM 9021 and 9672 mainframes for access to proprietary insurance and banking applications, customer profiles, myriad actuarial and product databases, and about 153 million documents—more than 1 billion pages—stored in the company's pioneering document imaging system. USAA's investment in LANs is significant as well: Roughly 18,000 PCs, running either OS/2 or Microsoft Windows NT, are attached to token-ring networks. The company's automated call distribution system, the world's largest, incorporates 23,000 telephone lines and

8,000 AT&T trunk lines.

Those systems and the management hierarchy behind them match the criteria for a CIO-100 award for excellence in infrastructure: modern, adaptable technology; a high level of data center and network uptime (USAA's is 99.6 percent and climbing); widespread infiltration of PCs and network access among rank-and-file workers; good standards setting and skillful management; and effective cost controls.

Yet the most important aspects of infrastructure management may not be wires or workstations but simply the wisdom to anticipate far-off problems and the willingness to tackle a tough sell head-on. Walker has had his fair share of both anticipating and selling in the past few years: USAA's information services group is now in the middle of a massive effort to upgrade the company's entire infrastructure to the tune of \$105 million.

THE BEST-LAID PLANS

THE REASON FOR THE EXPENSIVE, ambitious upgrade harks back to a fundamental business tenet that's been in place at USAA since the early 1970s: Technology plays a critical and measurable role in the company's survival. USAA, the country's fourth-largest insurer of homes and fifth-largest insurer of private automobiles, caters to about 3 million customers, primarily members of the U.S. military and their dependents. But unlike traditional insurers, which maintain local agents in thousands of markets, USAA conducts its business entirely by telephone, fax and direct mail.

"The agent has a knock on the door. Our knock is electronic," says Reggie Williams, vice president of network services and the man in charge of USAA's telephone systems, LANs and WANs, and data security. "Our marriage of computers and telecommunications has to be able to compete with that neighborly knock."

For all the excellence built into the current systems, managers saw as early as 1995 that they'd be encountering traffic troubles ahead. "The businesses said they wanted to deepen their relationship with the customer, but that's very information-intensive," says Walker. "If we were going to try to build a more responsive client/server distributed system, we first needed to get our infrastructure modernized so that we wouldn't have any choke points."

The company's multiyear Information Highway program calls for a complete rewiring of USAA's home office (which is three-fifths of a mile long) and four regional offices. Air-blown fiber-optic cabling will serve as the network back-

The most important aspects of infrastructure management may not be wires or workstations but simply the wisdom to anticipate far-off problems and the willingness to tackle a tough sell head-on.

United Services Automobile Association (USAA)

Headquarters: San Antonio

Business: Insurance and diversified financial services

CIO: Gen. Donald R. Walker

CIO Reports To: Gen. Robert T. Herres, Chairman and CEO

Revenues: \$6.7 million

IS Budget: \$513 million

Employees: 16,573

IS Employees: 2,013 assigned;
2,143 authorized

bone with CAT5 copper wiring traveling from network switches down to the workstation. On the backbone, asynchronous transfer mode (ATM) is the switching method of choice, with Ethernet taking over for local PC duty, all designed to boost bandwidth to the highest possible levels. Simultaneously, the desktop modernization project will put 12,000 new high-end Pentium PCs on the desktop this year, with approximately 20,000 machines slated to be installed by the end of 1999. A related Microsoft transition project calls for

October 12-15, 1997
Ritz-Carlton
Naples, Florida

Keynote Presenter
F. Warren McFarlan
Harvard Business School



Core Competencies & Competitive Advantage:

Think Internally, Act Externally

Moderator — Dr. Jim Wetherbe

Great Interaction With — Peter Bergman
John Cross
James Donehey

Christopher Hoenig
Loretta LaRoche
Abbie Lundberg

Randall Mott
Paul Saffo



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Lynda Rosenthal and Joseph L. Levy

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Understanding the interplay between IT and the main business competencies can be a matter of survival for CIOs.

Agenda

Detailed information about general and concurrent sessions and scheduled meals and activities throughout the conference.

Corporate Hosts

During the conference our Corporate Hosts, an exclusive group of innovative, visionary companies, will display a wide range of solutions to address strategic and operational IT.

Companion Program

Participation in the Companion Program includes all scheduled meals, receptions, entertainment, a companion-get-acquainted breakfast, stretch and tone class, and a Monday tour of The Conservancy. The Companion program does not include conference session attendance, with the exception of the keynote presentation on Tuesday afternoon.

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Conference Overview

IS knowledge and ingenuity has become a major stratagem for organizations to leverage in the continuing quest for profit and growth. A key component is recognizing unique business and technology core competencies that can propel your enterprise to increased profitable heights. The CIO's role in leading and supporting this drive will be examined at the latest *CIO Perspectives* conference, **Core Competencies and Competitive Advantage: Think Internally, Act Externally**, October 12-15, 1997 at the Ritz-Carlton, Naples, Florida.

IT executives will investigate the functions their departments provide in today's global market, and the rewards to be gained when they align their strengths to support the vision of the organization. IT must now be on-stage, it's every decision vital to the success of the enterprise.

Our keynote presenter, **F. Warren McFarlan**, senior associate dean, director of external relations and Albert H. Gordon professor of business administration, *Harvard Business School*, will discuss the increasing functions of IS in corporate strategy and the results this partnership has produced. Also featured is **Paul Saffo**, director, *Institute for the Future*. Our conference moderator will once again be **Jim Wetherbe**, director, MIS Research Center, *University of Minnesota*, Federal Express Professor of Excellence, Center for Cycle Time Research, *University of Memphis*. Read the agenda on the following pages to see the other relevant content experts you'll meet at the Ritz.

To enroll, or for more information, please visit our Web site at www.cio.com or complete the enrollment form on the back of this brochure and fax it to 508 879-7720. Questions? Please call us at 800 366-0246.

Join us at this important event. Register and book your hotel now!

Regards,

Lynda Rosenthal

Lynda Rosenthal
Senior Vice President and
General Manager
Executive Programs

Joseph L. Levy

Joseph L. Levy
President and Group Publisher

IT's the Core of the Business!

By Jennifer Bresnahan

Ten years ago, when the future CEO of Capital One Financial Corp. first started pitching banks with an idea to revolutionize the one-size-fits-all credit card industry, nobody was even remotely interested. Nobody, that is, but a little regional bank in Virginia that figured it had nothing to lose.

Now, a decade and many billions of dollars later, that bank's credit card division has spun off into financial services company Capital One, one of the largest credit card issuers in America. At the heart of its success lies a single core competency that created significant competitive advantage. By analyzing terabytes of consumer data to pinpoint just the right credit card for the right individual, Capital One differentiated itself from its competitors and built a financial empire. And now the company is busily extending this same capability into new, non-financial markets. "We have the core information-based marketing strategy, now the sky's the limit for how we apply it," says Capital One's senior vice president and CIO **James P. Donehey**.

Core competencies like these are the pinnacle to which all companies aspire. If an organization cannot develop a specialty that sets it apart from the competition, "the penalty for that failure is swift execution," says **F. Warren McFarlan**, senior associate dean and director of external relations at the Harvard Business School. Unfortunately, this is only the first step. To keep its lead, a company must constantly devise new and better ways to operate. As **Randall Mott**, senior vice president and CIO for Wal-Mart Stores, Inc., says, "differentiation in your business is something you have to work on every day to keep."

The CIO plays a significant role in helping the business develop and maintain core competencies. Indeed, this is

arguably the single most important responsibility that the position carries. "The CIO needs to understand that IT, perhaps more than anything, can contribute to making

the business profitable," says

James Wetherbe, director of the University of Minnesota's MIS Research Center and Federal Express Professor of Excellence at the University of Memphis. Moreover, understanding the interplay between IT and the main business competencies can be a matter of survival for CIOs. "It's up to the them to figure out how to translate competitive advantage to the IT arena, because if they don't, I can guarantee that nobody else in the organization will do it on their behalf," says

Paul Saffo, director of the Institute for the Future. And in the end, the conclusions made by the often IT-illiterate CEO may not bode well for the CIO, Saffo says.

Rob Cohen, for one, does his part to help the \$2 billion dollar pharmaceutical company Astra Merck, Inc. attain competitive advantage by anticipating what the business will need as it strives to maintain its core capabilities. For

example, knowing that a customer-focused salesforce is one of Astra Merck's key differentiators, Cohen, CIO and vice president of information technology and capabilities, installed sophisticated desktop publishing capabilities at each sales office to allow the salespeople to tailor patient information and other brochures to their customers' specific needs. Cohen's goal is to ensure that technology never gets in the way of new competitive initiatives; the business shouldn't even have to think about technology, much less encounter a roadblock because of it, he says.



**"Differentiation in
your business is something
you have to work on
every day to keep."**

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Five Vital Signs

Specialized core competencies like those that enabled Wal-Mart Stores, Inc. or Capital One Financial Corp. to become market leaders may be the fondest dream and ultimate goal of every business person in the known world. But for some companies, these business specialties just don't make sense. Trying to develop a niche advantage without first perfecting the business basics is like trying to run without knowing how to walk, says

Christopher Hoenig, director of information management and technology at the U.S. General Accounting Office, Congress' investigative arm.

"If you just have specialized competencies, you're going to die because your general competencies are what allow you to adapt and build new effective ones," Hoenig explains. "A specialized competency is only good for a couple of years."

According to Hoenig, who is now writing a book on the subject, leading companies in the information age tend to excel in five vital competencies:

- *Value management: developing loyal customer and stakeholder relationships*
- *Mission Management: identifying the areas of focus in a business*
- *Asset Management: configuring assets to be optimized to the business needs*
- *Capacity Management: taking the assets and making them work*
- *Decision Making and Culture Management: increasing the rapidity of decision making and infusing the organization's culture with innovation and experimentation*

As a member of a company's management team, the CIO should consider each of these competencies on some basic level. But in asset management (specifically technology and knowledge assets), the CIO must assume an aggressive leadership role to maximize the risk adjusted yield in technology and information investments. "If you know exactly where all your assets are, how much they're worth and where they are in their life cycle, then you've got some idea of the valuation of your assets," says Hoenig. If not, it's unlikely a CIO can be effective in any other endeavors, he adds.

"The more of these core competencies you have, the more competitive advantage you can generate," says Hoenig. "The whole point is that these core competencies don't just generate competitive advantage once, they deliver a sustainable competitive advantage."

John Cross, head of IT at the \$60 billion dollar British Petroleum Company PLC, takes an even more active role — he outsources almost all of the tasks that typically fall to IS organizations, including support of the WAN, LAN and desktops, to enable his IS organization to concentrate on business strategy issues. "We outsourced to allow us to refocus on the business agenda," says Cross. "If you run big IT shops, in essence your managerial time and attention is totally consumed in running your internal shop."

While this outsourcing approach is not appropriate in every company, says Cross, it works for British Petroleum. Free from the hassles of technology fires, Cross is able to tackle the vital goal of finding oil quickly. Previously,

British Petroleum

typically had to drill

about ten holes before

actually striking oil, at a

loss of \$15 to \$30 million

dollars per hole, says

Cross. That was before he

stepped in to provide

company scientists in the

field with 3-D imaging

tools and access to

terabytes of data. Now it only takes one or two dry holes before

they find oil. "I never would've been able to focus the time on

understanding the problems and needs of scientists if I had

been buried in the engine room," says Cross.

As for Capital One, Donehey is in the enviable position of heading up IT in an organization where IT and the company's core competencies are one and the same. "People talk about how they've got to get their IT strategy in line with their marketing strategy," says Donehey. "At Capital One, they are the same strategy. They're so closely linked that it's almost impossible to talk about a new business strategy without talking about IT strategy, and vice versa."

While such synchronicity is rare, it is the ideal to which all CIOs and their business partners should strive.

"Information technology remains the best game in town for increasing organizational competitiveness," says Wetherbe.

"More than ever, the CIO needs to understand the business, its core competencies and how IT can best be used to leverage them. CIOs should be helping the company redefine its core competencies, as well as coming up with new ones."

Jennifer Bresnahan is senior writer at CIO Magazine and can be reached at jbresnahan@cio.com.

CIO

**"We have the core
information-based
marketing strategy,
now the sky's the limit
for how we apply it."**

Core Competencies & Competitive Advantage:

Think Internally, Act Externally

Sunday, October 12

3 p.m. - 6 p.m.

Conference Registration

7 p.m. - 9 p.m.

Welcome Reception

9 p.m. - midnight

Hospitality/Networking

Monday, October 13

7:30 a.m. - 8:15 a.m.

Breakfast

8:15 a.m. - 8:20 a.m.

Welcome and Opening Remarks



Joseph L. Levy
*President and
Group Publisher
CIO Communications, Inc.*

8:20 a.m. - 9:15 a.m.

**Learning from Other
Organizations' Core
Competencies —
Defeating the "Not Invented
Here" Syndrome**



Dr. Jim Wetherbe
*Director
MIS Research Center
University of Minnesota
Federal Express Professor
of Excellence
Director
Center for Cycle
Time Research
University of Memphis
MODERATOR*

Many organizations develop a pathology of only thinking, learning and attempting to innovate in their own contexts. In reality, there are few truly new ideas. Most progress is made through transfer or diffusion of innovation. In this practical and thought-provoking presentation, Wetherbe will share straightforward approaches to learning from others to improve their own organization's core competencies.

9:15 a.m. - 10 a.m.

**IT Challenges for the Third
Millennium**



John Cross
*Head of Information
Technology
BP Group
The British Petroleum
Group PLC*

This session will look at key business challenges and set them in the context of emerging future technologies. Cross will show how he sees these challenges as shaping IT's contribution (and its competencies) to the future as well as how this might impact the business and enhance its capacity for improved performance.

10 a.m. - 10:30 a.m.

Coffee Break



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10:30 a.m. - noon

**Strategic IT in the 21st Century:
A CEO/CIO Roundtable**



Abbie Lundberg
Editor in Chief
CIO Magazine
MODERATOR



Matthew Emmens
President and CEO
Astra Merck, Inc.



Robert Cohen
Vice President
Information Technology
and Capabilities
CIO
Astra Merck, Inc.

Hal Rosenbluth
CEO

Rosenbluth International

Dean Siveley

Vice President, Marketing
CIO

Rosenbluth International

Experts agree that we are entering a new era of the information age. More and more business leaders understand information's role in driving their organizations, and they know that using technology well is central to their success. So what do CIOs do now that non-IT executives have technology in their sights? How can they help their bosses and peers get a handle on this? This roundtable discussion will explore the degree to which IT has permeated business planning and operations and examine successful models of strategic IT leadership through both the CEO's and CIO's eyes.

Noon - 1:30 p.m.

Luncheon

1:30 p.m. - 2:30 p.m.

**Building a World Class
CIO Organization:
A Global Problem
Solving Model to Improve
Information Age Competency**



Christopher Hoenig
Director
Information Management
and Technology
U.S. General
Accounting Office

Whether they are in Kansas City or Kuala Lumpur, Baltimore or Berlin, leading CIO organizations around the globe are gradually developing a new model of how to run an enterprise in the information age. It is systematic, yet flexible; global, yet local; and concentrates on maximizing the risk-adjusted yield from both knowledge and technology assets. With illustrations from research on dozens of leading public and private sector organizations around the world, Hoenig will present this problem solving model and discuss its implications for the design, creation and management of world class CIO organizations.

2:45 p.m. - 3:30 p.m.

Concurrent Sessions

3:30 p.m. - 4 p.m.

Coffee Break

4 p.m. - 4:45 p.m.

Concurrent Sessions — Repeated

6:30 p.m. - 8 p.m.

Reception

8 p.m. - midnight

Hospitality/Networking

8 p.m. - 9 p.m.

Reception

Hosted by Hewlett-Packard Company



9 p.m. - 10 p.m.

**Hewlett-Packard
Presents
Dave Barry**



10 p.m. - midnight

Reception

Hosted by Hewlett-Packard Company

Tuesday, October 14

7 a.m. - 8 a.m.

Breakfast

8 a.m. - 9 a.m.

**Live from WY2K: 1000 Ways
to Survive the Millennium**



Peter Bergman
Co-Founder
Firesign Theater
President
Bergman Stallone, Inc.

The millennium is coming! The millennium is coming! We've known it was going to happen for hundreds of years, but now that it's actually upon us, what are we going to do? Relax, let Peter Bergman, the court jester of the cyber world and famous funny man, give you all the tips you need to get ready for the year 2000. His one man computer comedy show, "1000 Ways to Survive the Millennium," is the perfect answer for overworked CIOs who aren't sure how they're going to make it into the next century.

9 a.m. - 10 a.m.

**Leveraging Wal-Mart Culture and
Information for Competitive
Advantage**



Randall Mott
Senior Vice President
and CIO
Wal-Mart Stores, Inc.

The unique culture of Wal-Mart Stores, Inc. has been a key factor in helping them become the world's largest and most profitable retailer, with 1997 sales of over \$104 billion. To duplicate that culture across 3,060 stores and Sam's Clubs,

Wal-Mart has deployed a strategy of Local Merchandising — the customization of each of Wal-Mart's stores and clubs, here and abroad to the specific needs of the customers in the community. Emphasizing speed of development and choosing to "make," rather than buy their applications, the company has implemented technology systems ranging from price verifiers to supply change management systems, and even a 24 terabyte data warehouse, the world's largest commercial database system. This session will explore the role that an information core competency plays in making strategy a reality.

10 a.m. - 10:30 a.m.

Coffee Break

10:30 a.m. - 11:15 a.m.

Concurrent Sessions

11:30 a.m. - 12:15 p.m.

Concurrent Sessions — Repeated

12:15 p.m. - 1:30 p.m.

Luncheon

1:30 p.m. - 2:15 p.m.

Concurrent Sessions

2:30 p.m. - 3:15 p.m.

Concurrent Sessions — Repeated

3:15 p.m. - 3:45 p.m.

Coffee Break

3:45 p.m. - 5:45 p.m.

At the Intersection:

IT and Corporate Strategy



F. Warren McFarlan

Senior Associate Dean
Director of External
Relations

Albert H. Gordon

Professor of
Business Administration
Harvard Business School

The late 1900's have shown an unprecedented intersection and intertwining of information technology and corporate strategy. Organizations must deal with IT's impact on the nature and quality of its products and services, while

redefining its channels of distribution and methods of promotion. In this new world the CIO is indispensable to managers in choosing intelligently among alternative strategies and installing the disciplines necessary to translate the chosen course into concrete actions and systems.

5:45 p.m. - 7 p.m.

Reception with F. Warren McFarlan

7 p.m. - midnight

Hospitality/Networking

Wednesday, October 15

7:15 a.m. - 8:15 a.m.

Breakfast

8:15 a.m. - 9:15 a.m.

Preventing Hardening of the Attitude: Reducing Workplace Stress



Loretta LaRoche

Founder

The Humor Potential

Loretta LaRoche's expertise lies in



her ability to point out the irrational ways people interpret their stressors. With anecdotes and amusing references to herself, she has her audiences literally laughing till they cry. She touches the familiar in all of us. As Wednesday morning's opening session, LaRoche will be sure to start your day off on the right foot, you will leave laughing and free of stress!

9:15 a.m. - 10 a.m.

An Information Based Strategy: Where IT and Business are One and the Same



James Donehey

Senior Vice President
and CIO

Capital One Financial
Corporation

How does a division of a small regional bank grow from \$1 billion in managed assets to \$12.2 billion in less than 10 years? Maintaining a

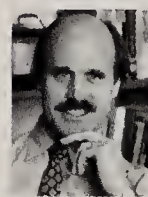
20% year on year earnings growth while diversifying and expanding both domestically and internationally, IT became the company's "central nervous system" and integrated fully with the business strategy. Capital One Financial has an information based strategy, where IT and business are one and the same. The business helps direct IT strategy and IT is at the core of the business strategy. It's about information.

10:15 a.m. - 10:45 a.m.

Coffee Break

10:45 a.m. - noon

Disinter-remediation: The Surprising Impact of Information Systems on Markets and Organizations



Paul Saffo

Director

Institute for the Future

Conventional wisdom has it that the introduc-

tion of information systems into organizations "disintermediates" middlemen and flattens organizations. In fact, this is only half of the process, for this process in turn leads to a greater complexification that ends up interposing new kinds of middle players, and entirely new kinds of market and organizational structures. This session details the nature of the disinter-remediation process and it's surprising consequences for organizational structures and market positions.

Noon

Closing Remarks

Jim Wetherbe

CONCURRENT SESSIONS

Leveraging Core Competencies to Achieve a World Class Solution



Richard J. Goldberg
*National Database
Marketing Manager
IBM North America*

*Courtesy of
Acxiom Corporation*

In anticipation of the increased competition and industry changes in the computer hardware and software market, in 1993 IBM launched a strategy to use direct marketing to enhance market share and maintain its position as a global leader. One of the cornerstones of this initiative was the establishment of a world class Database Marketing (DbM) capability. The successful implementation of this strategy was a result of leveraging core competencies both internally and externally. The DbM team was responsible for establishing a business intelligence competency that would help identify revenue opportunities and provide strategic direction. This session will review the development process of the IBM DbM organization, their component databases (contact, analytic and prospect) and how it has played a key role in supporting the continued growth of direct marketing within IBM worldwide.

Leveraging IS for Competitive Advantage



James J. Ryan
*Vice President
Information
Management Group
Data General Corporation*

The next wave of commodity-based computing promises to deliver a quantum leap over today's price/performance metrics. New computing waves come so quickly that most enterprises are slow to integrate these new technologies in their daily

operations. In the same time it takes to implement new systems and business processes, an enterprise could find itself behind the curve. How can you implement new systems that enable you to exploit your core competencies in pursuit of competitive advantage? Strategies for aligning IS with an organization's external business goals, using a real-world example of change management at Data General Corporation will be offered.

Netcentricity: Architectures for Managed PCs



Jay Bell
*Senior Dell Fellow
Dell Computer Corporation*

Achieving lowered costs in managing networked clients while providing a flexible user environment requires changes in both operating system and hardware architectures. This manageability dictates a philosophical shift of ownership and control - from the local console to the corporate network. For example, Zero Administration for Windows® is simply a precursor to free-seating 'Net access and revision-controlled or execution-denied software applications. Hardware architectures must also evolve from today's CPU-centric peripherals to network-centric, or "netcentric", architectures. Moving hardware control closer to the 'Net encompasses satellite-equivalent data rates offering unparalleled bandwidth at lower costs. Netcentricity architectures also improve application performance by freeing the CPU's bus hierarchy from complex movement of 'Net packets. This presents new opportunities in reducing total cost of ownership.

The CIO is the CEO of the Future



Phil Andrews
*Vice President
Corporate Office of Strategy
EDS*

More than ever before, the needs of the future are encouraging CIOs to think and behave as strategists and business leaders. The future will require an enormous ability to master information and knowledge of the enterprise, both as key elements of the infrastructure and as assets of the enterprise. CIOs must now focus on key issues, such as defining the core capabilities, skills and competencies of the IT organization; defining the non-core capabilities, skills and competencies that need to be outsourced to other business partners and third parties; and defining electronic affinity groups that will jointly target markets of common interest. In this interactive session, Andrews will share his insight on the role of the CIO as the CEO of the future.

Competency and the Wise Deployment of People



Ron Tarro
*Director
New Technology
Landscapes Program
Ernst & Young LLP*

Since you believe in building competency-based organizations, can some of your assumptions about project structure and project team organization be challenged and reconsidered? Will adopting a competency-based view of your organization actually require changes in your approach to IS resource development, acquisition and deployment? This session will integrate ideas of organizational competency with approaches to IS project management and project team formation. The session will consider some basic principles about

how to deploy people, management knowledge, transforming project team roles and reconsidering organizational structures and boundaries, and will apply the ideas of competency in considering some unique principles for insourcing and outsourcing.

A Concurrent Session Will Also be Presented By:



Stephen Hamilton
Processes Technology Manager
Hewlett-Packard Company

The IT Organization: Enabling Business Intelligence



Sandra Moran
Senior Director
Hyperion Software

The success or failure of a company's strategy and ability to remain competitive is directly related to IT's ability to provide an infrastructure that ensures rapid access to information for fast and effective business decisions. And, providing an infrastructure that incorporates the right mix of technology, data and resources is critical to ensuring that knowledge workers have the right time via the right delivery mechanism. Today's successful IT organizations are implementing an approach that views the user community, IT and vendors as business partners. This session will discuss the approach that IT organizations need to take in order to provide a fast and flexible information infrastructure to meet critical business goals, such as profitability and information accessibility, and to capitalize on a company's existing information assets.

The Importance of Standards for Emerging Technologies



Rich Lechner
Director
Network Computing Technologies
IBM Software

The dynamics of the network computing arena are continually evolving. At the same time, the Internet is becoming an integral part of business for all industries. The uncertainty of this environment presents challenges for professionals managing Internet-driven business. This session will address solutions to the most pressing network computing problems, including standardization of emerging technologies, integration of diverse technologies, security and doing business on the Web.

Absorbing New Technologies: The Key to Building Competitive Advantage



Claude Wimberly
Director
Enterprise Marketing
Intel Corporation

The pace of business and technology advances too quickly to rely on legacy approaches to solving problems and increasing an organization's competitiveness in the global economy. The growing acceptance of Intel architecture-based Standard, High-Volume (SHV) Servers to meet more and more demanding applications is radically changing the way IT investments are viewed. "PC Servers" in networks and clusters are delivering reliable, scalable solutions for mid-range and data center computing problems today. The organizations who take the best advantage of new technologies to compete in global markets are likely to be the successful organiza-

tions in the long term. The continuing evolution of Intel architecture through the end of the millennium will provide a platform for absorbing new technologies and adapting to change as never before.

Clone Your Best Developers! Increase Core Competency with Best Practices



Rick J. Pleczko
Senior Vice President
Product Marketing and Development
LBMS, Inc.

For years we have been told that application development is too slow, produces poor quality products and costs too much. Now we are hearing about IT organizations that are significantly improving their core competencies, delivering better solutions to the business and achieving and sustaining breakthrough levels of performance. These organizations are using process management to capture, deploy and continuously improve industry and organization best practices. This session will examine how organizations are implementing process management to improve their core competencies and dramatically increase their delivery capability.

Technology as a Competitive Advantage



Karyn Mashima
Vice President
Advanced Multimedia Communications Systems
Lucent Technologies

As the struggle for customer's attention (and dollars) intensifies, businesses everywhere strive to develop new advantages that give them a "leg up" on the competition. The delivery of information in a timely manner is one way that the IT professional of today is crucially involved. But is this enough? The IT

professional for the 21st Century will increasingly seek new ways of doing business and new technologies that allow their company to continually lower operating costs, enable new applications and provide better customer service. This session will discuss new technologies (including those blending voice, video and data) and highlight various customer scenarios where forward-thinking companies have expanded and enhanced their competitive advantages and delivered creative ways of doing business.

When Outsourcing Meets the Manufacturing Industry



Cornell R. Williams
Project Executive
Fieldcrest Cannon
Lockheed Martin
Corporation

In August 1996, Fieldcrest Cannon, Inc., a major manufacturer of home textiles, signed a 10-year contract with Lockheed Martin to assume full responsibility for all its IT operations. This session will focus on Fieldcrest Cannon's reasons for outsourcing these services and how Lockheed Martin is helping the corporation meet its business goals and operating strategies. Special emphasis will be placed on the challenges of implementing an Enterprise Resource Planning system and the approach taken by Lockheed Martin to achieve the cultural, business and technical objectives of this project.

The Evolution of the Data Center



Steve Wanless
Senior Marketing Manager
Product Marketing
Programs
Sequent Computer
Systems, Inc.

Evolving business requirements coupled with accelerating technological change are driving the creation of the next generation of mission critical Data Centers. This session will examine the business usage of a current data center and how its usage profile is likely to change in the next few years. The ramifications of these changes to both the structure and deployment of the data center and the basic technology content will be discussed in detail. It will become clear that a new generation of applications will need to be created, within an entirely different operating environment that supports new access methods. This will be the hallmark of the 3rd generation of data center.

Applied Videoconferencing Network Management Techniques

Rick Camp
Senior Product Manager
VTEL Corporation

Many organizations would like to utilize videoconferencing more intensively than they do today. One barrier to doing so has been the need for technical support personnel to be close by so they can assist with conference setup and troubleshooting if necessary. The session will address this barrier by discussing applied videoconferencing network management techniques, such as those used in the data networking industry. Functionality can include call setup, scheduling, centralized address book management and system monitoring and diagnostics.

Concurrent Sessions will also be presented by:

Cabletron Systems
Centura Software Corporation
Cisco Systems, Inc.
Informix Software, Inc.
Sterling Software
Sun Microsystems, Inc.

Companion Program Agenda

Sunday, October 12

3 p.m. - 6 p.m.

Conference Registration

7 p.m. - 9 p.m.

Welcome Reception and Registration

9 p.m. - midnight

Hospitality/Networking

6:30 p.m. - 8 p.m.

Reception

8 p.m. - midnight

Hospitality/Networking

8 p.m. - 9 p.m.

Reception

Hosted by Hewlett-Packard Company

9 p.m. - 10 p.m.

**Hewlett-Packard Presents
Dave Barry**

10 p.m. - midnight

Reception

Hosted by Hewlett-Packard Company

12:15 p.m. - 1:30 p.m.

Luncheon with conference participants

3:15 p.m. - 3:45 p.m.

Coffee Break

3:45 p.m. - 5:45 p.m.

**Keynote session with
F. Warren McFarlan**

5:45 p.m. - 7 p.m.

**Reception with
F. Warren McFarlan**

7 p.m. - midnight

Hospitality/Networking

Monday, October 13

8:30 a.m. - 9:30 a.m.

**Stretch and Tone Class with
Beach Walk**

9:30 a.m. - 10:30 a.m.

Companion Breakfast

Noon - 1:30 p.m.

Luncheon with conference participants

1:30 p.m. - 5:30 p.m.

Tour of The Conservancy

Tuesday, October 14

7 a.m. - 8 a.m.

Breakfast with conference participants

10 a.m. - 10:30 a.m.

Coffee Break

Wednesday, October 15

7:15 a.m. - 8:15 a.m.

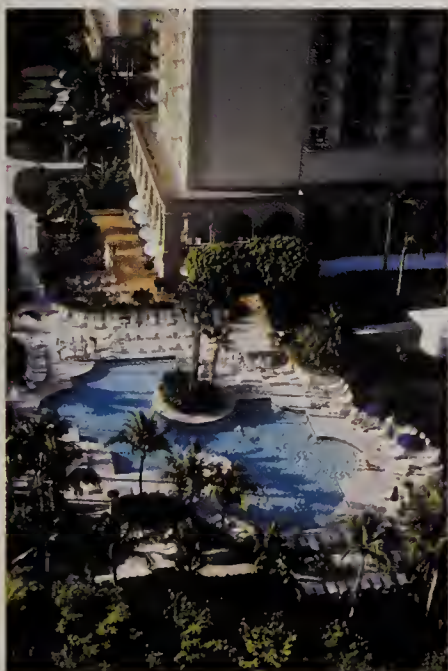
Breakfast with conference participants

10:15 a.m. - 10:45 a.m.

Coffee Break

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- ☐ **Golf Tournament:**
Yes, I'd like to participate in the golf tournament on Sunday, October 12 at 11 a.m.
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TRANSPORTATION

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All enrollment fees must be paid in advance of the meeting. Fee includes conference sessions, concurrent sessions, corporate host displays, conference materials, scheduled meals, receptions and entertainment. Transportation, hotel and recreation are your responsibility. Please note that submission of this enrollment form to CIO obligates the attendee/sender for the enrollment fee.

CANCELLATION

You may cancel your enrollment up to September 12, 1997 without penalty. A \$250 administration fee will be imposed for cancellations between September 13-26. No refund or credit will be given for cancellations received after September 26, 1997 or for no-shows. All cancellations must be received in writing. You may send a substitute in your place. CIO reserves the right to decline enrollment to any registrant.

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switching from OS/2 to Windows NT on all desktop machines and Windows 95 on laptops.

GOAL TENDING

FROM THE BEGINNING, IS'S GOALS for the new infrastructure were twofold: to provide a higher degree of responsiveness—or as the staff's rallying cry says, to provide "information where and when you need it"—and to reduce the total cost of ownership on the computing systems in general. Not only were the mainframe applications unable to provide the increasingly sophisticated analysis required by USAA businesses, Walker says, but the systems were becoming ever more expensive simply to

himself signs off on IT expenditures, even approving personally the switch from OS/2 to NT—but to the managers of USAA's five lines of business who would be asked to foot the bill for the new infrastructure because IS expenditures are recovered 100 percent through chargeback.

"When you try to get the infrastructure funded, you hear, 'Well, what's the return

on investment?' And of course there isn't one per se," says Walker. "It's almost a case of selling it by negatives. You tell them that the train crash is going to occur a year from now, two years from now." By documenting the increasing cost of ownership, Walker was able to provide concrete numbers as proof that expenses would increase even as the system failed to meet new business objectives.

It's one thing to propose a new architecture, as IS first did in 1995, and quite another to win \$105 million in funding.

maintain, thanks to 25 years of "spaghetti code" and undocumented changes to programs and systems.

Then, too, there was the simple matter of speed. With use of the intranet, Internet and electronic messaging increasing exponentially each year, the networks were having trouble handling the traffic they already had, nevermind expanding for the future. "When we started this two and a half years ago, the need for more bandwidth was upon us," admits Williams. "We weren't way out in front of it; we were racing barely ahead of it."

It's one thing to propose a new architecture, as IS first did at a USAA strategic planning conference in 1995, and quite another to win \$105 million in funding. CIO Walker had to sell the project not only to upper management—and CEO Gen. Robert T. Herres

The Cost of Doing Business

End users at Sun Microsystems expect a top-quality infrastructure, but IS has to make them willing to pay for it

THE WAY SUN MICROSYSTEMS Inc. CIO William J. Raduchel sees it, it's tough for IT to win when it comes to infrastructure. First, managers strive to deliver the latest technology at the lowest cost to technology-hungry users. Then they must convince those users that they're getting their money's worth from the system.

"The hard problem is [having] a network that works well [but] is perceived by some [users] as too expensive, even though they often are the major drivers of those costs," Raduchel says.

Sun, based in Mountain View, Calif., has what can safely be called a state-of-the-art infrastructure. Most desktops are Sun SparcStations (no surprise), and the company expects to put in 3,000 JavaStations over the next six months. Sun's network is primarily 100Mbps switched Ethernet; network servers and data-center servers are almost all Sun boxes, with the exception of one mainframe.

To make sure Sun's IT chargeback rates are lower than industry standards, Raduchel measures his department against companies with comparable environments. While it's hard to get a completely accurate comparison, he says, a recent benchmark study shows Sun's costs are more than 30 percent below the average.

In fact, Sun has cut costs to units every year for the past five years while improving service, primarily by

consolidating standards—such as implementing a thin client standard desktop architecture similar to what some companies call a network computer—and dealing with as few vendors as possible.

Raduchel says the most difficult part of his job isn't installing a high-caliber network but selling its value to end-user departments. To educate internal customers, Raduchel tries to quantify the service he provides. He distributes benchmark figures, and he makes public price lists for their technology demands so that users can see what they're paying for and how much it costs.

Most important, says Raduchel, is that business units determine their own technology costs. "The business groups own the people and the budget," he says. "It's their money and their project." Raduchel, the Sun CEO, individual business owners and their respective information resource executives run an annual systems adequacy review to highlight ongoing issues, ensure the proper management of systems overall and reaffirm that business units control their technology.

Still, Raduchel admits success in the area of technology public relations may never reach 100 percent. "On balance, the customers are largely in control," says Raduchel, "and yet complaints over service-fee levels remain at a high pitch. I fear that is life for any CIO."

—T. Mayor



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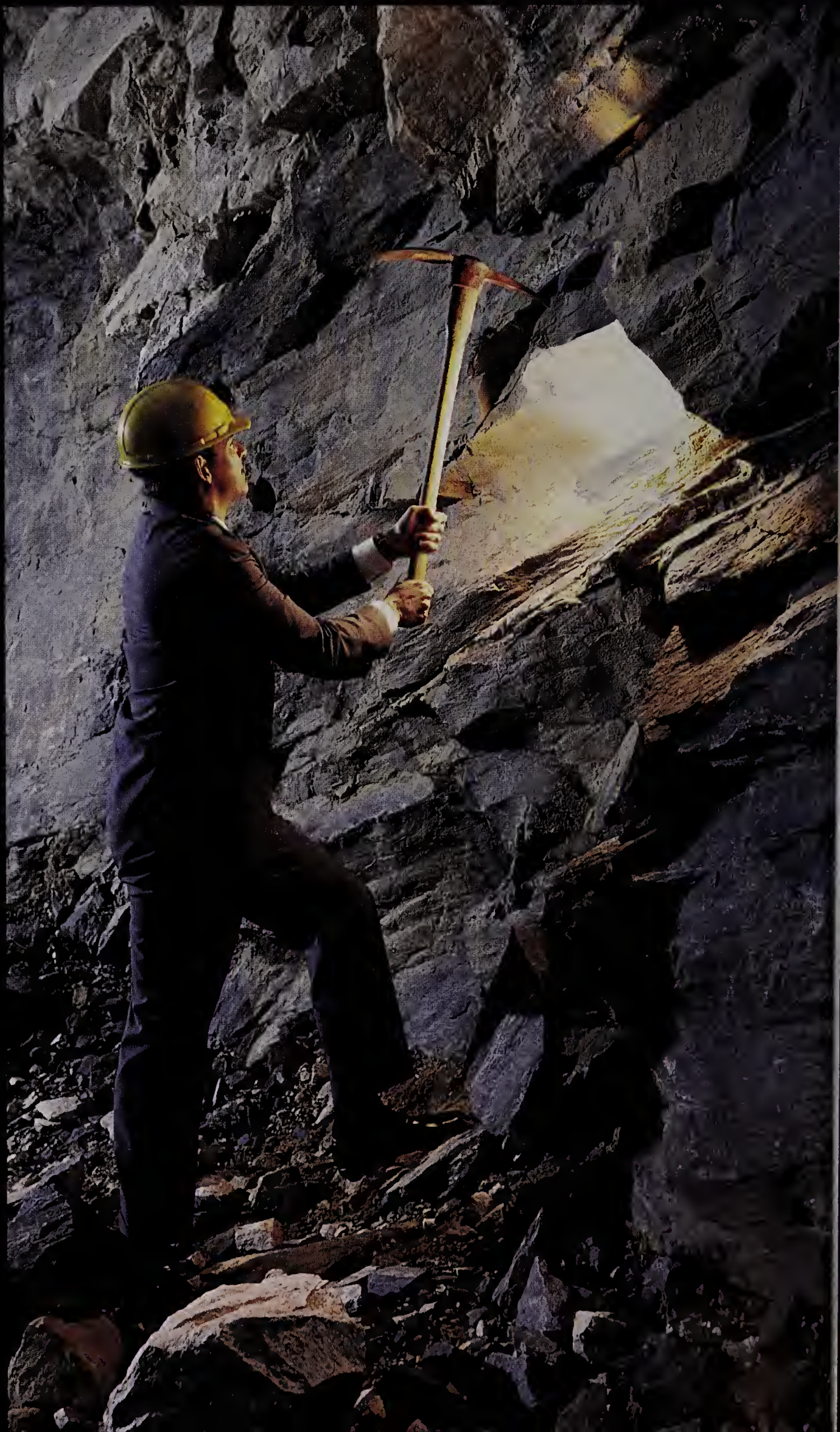
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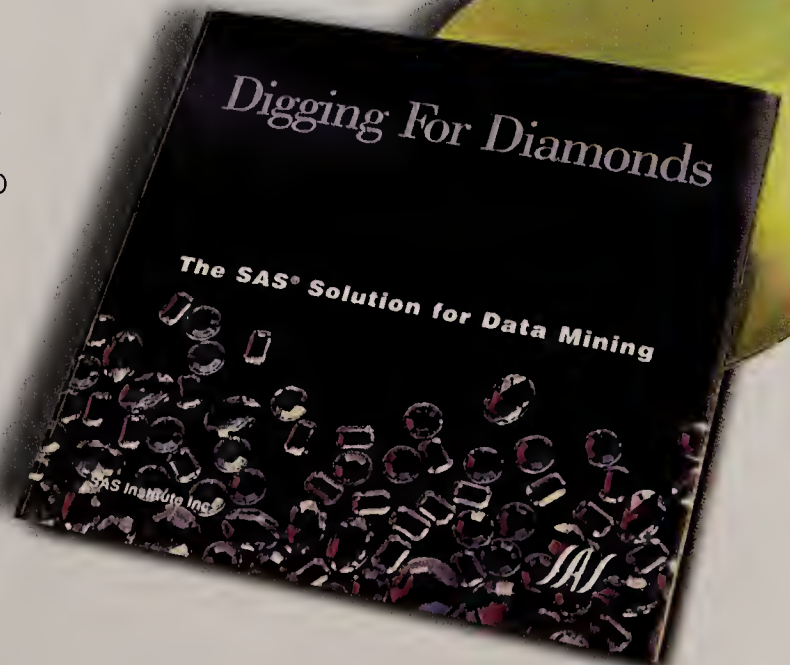
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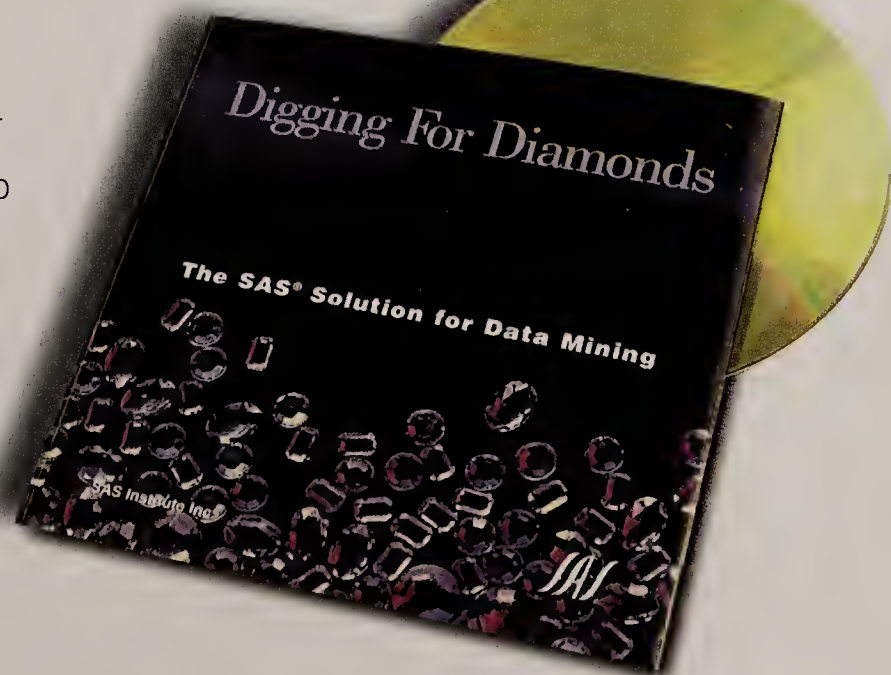
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Service ACE

At Elf Atochem, IS helps its customers make the right technology decisions, and that's the secret to keeping everyone happy

BY RICHARD PASTORE

A

T CIO-100 HONOREE ELF ATOCHEM, the internal information systems customer isn't always right. That may sound like heresy coming from an IS department, which might be expected to do backflips for its internal customers. Actually, the notion comes from Elf Atochem's CEO. "Our ultimate goal is to [give business users] all the information and tools they need to conduct their business," says Bernard D. Azoulay. "But I don't think you can just say the business guy is

Best Practices for Internal Customer Support

ORGANIZATIONS THAT PRACTICE high-performance internal customer support are skilled in:

- ▶ Knowing the business and understanding the business impact of IS actions
- ▶ Partnering with business users to develop and implement best-in-class applications
- ▶ Providing a rapid-response, cost efficient help desk
- ▶ Measuring for continuous improvement
- ▶ Cultivating commitment to training



Elf CEO Bernard Azoulay (right), CIO Robert Rubin (center) and line business executives like Peter Bromley (left) ensure that users understand what technology can do for the business.

INTERNAL CUSTOMER SUPPORT CIO 100

right and you have to please him. You won't get an optimized organization that way; you may end up with a monster." Rather, Azoulay expects the IS organization to help users understand how to make the technology choices that are right for the business and then to deliver and support those choices.

CIO Robert M. Rubin is more circumspect. "My job is to help people achieve their business objectives but also to say, 'Hey, maybe there's a better way.' It's a collaboration to achieve the maximum results for Elf Atochem." From the CIO on down to the co-op art history student manning the help desk, that's the fundamental philosophy that frames and guides IS's internal customer support at Elf. It's knowing what's good for the company.

As long as the business needs are kept in mind, excellent customer service turns out to be very good for this company—and any company for that matter. Customer satisfaction with IS is one of the most important measures of how efficient, responsive and credible an IS department really is. At Elf Atochem, IS has earned a reputation as a valued business partner in large part by providing excellent service, first by helping the company through merger pains when it was formed from three separate entities in 1989 and now by reengineering enter-

BUSINESS DIALECTS

A PREREQUISITE FOR EXCELLENT internal customer service is that the IS staff must understand the business of—and speak the same language as—the customers they are supposed to support. "We've had to resolve this basic problem that you have in most organizations—the lack of understanding between the IS department and the business people," says Azoulay. He made sure the CIO could talk business by putting him in charge of business-process reengineering. "This way, Bob [Rubin] has to talk on a day-to-day basis with business people," Azoulay says.

Proof that this approach works is apparent as Rubin talks in an elevator with a sales manager about justifying time spent with low-profit external customers. Or when Rubin advises the senior vice president of human resources to pitch an SAP HR system overhaul to the executive committee on the basis of the business problem it solves rather than on its cost justification. But certainly the CIO's business knowledge won't rub off on every one of the 139 people in IS. The company takes other steps to promote business understanding among the IS staff, including monthly business awareness breakfasts. During the hour-long breakfasts, a business unit leader speaks to IS about his or her unit's objectives, problems and plans. "The goal is to build a bond between the business units and IS people," Rubin says. "The one rule I have is that the business person not talk about computer systems. It's not the time to bring up systems problems or needs."

The bonding over bacon and eggs has paid off. The Elf IS staff "consistently considers the business case in their customer service interaction," observes Nancy Wendt, principal consultant at

Omega Point Consulting in Greensboro, N.C. Wendt has worked with Atochem staff on Society for Information Management working groups.

PARTNERS IN BUSINESS

O NCE IS STAFF AND BUSINESS people understand each other, the next step is getting them to work together. Three years ago, Azoulay's call for total-process reengineering brought IS and business personnel together to form Team Ato, the company's full-time reengineering task force. The team, currently 65 dedicated people (of whom 60 percent are from IS), took on everything from manufacturing to sales and brought in integrated enterprise software from SAP AG to automate the new processes. Today, with seven of 11 business units online with SAP's R/3, Elf Atochem is one of the rare companies that can boast of an SAP implementation that's

"Since we went into our reengineering effort with IS, I've felt more like a customer today with them than I do walking into my bank."

—PETER BROMLEY

on budget and on time. Riding the wave of this success, Team Ato has been the model of excellent internal customer support through partnering.

"Since we went into our reengineering effort with IS, I've felt more like a customer today with them than I do walking into my bank," says Peter Bromley, group president, agrichemicals. Bromley is as close to 100 percent satisfied with the IS department as one could hope for, but he started out full of doubt. Agrichemicals' business is distinct from a lot of the other Atochem product groups—it's global, and it sells directly

Elf Atochem North America Inc.

Headquarters: Philadelphia
Business: Chemical manufacturing
CIO: Robert M. Rubin
CIO Reports To: Bernard D. Azoulay, President & CEO
Revenues: \$1.8 billion
IS Budget: \$20 million
Employees: 4,500
IS Employees: 139
Web Site: www.elf-atochem.com

prisewide processes to support strong growth. (Elf Atochem, a subsidiary of the French company Elf Aquitaine, does not report its profits separately.)

READY

Millions of businesses and consumers are looking for a secure way to buy and sell merchandise over the Internet.

to end customers, as opposed to other units that sell to middlemen. Bromley was concerned that IS would try to impose a cookie-cutter process automation for his group that wouldn't meet its specific business model. But IS took steps to understand the model and deliver a well-suited solution, he says.

One method that helped was the "orientation day." Agrichemicals general managers spent an entire day with IS and the SAP team, presenting their unit's products, distribution system and more. For firsthand knowledge, IS staff trav-

eled to remote unit locations, and Bromley even "dragged" Rubin out to his European sites. Today, Bromley's users and IS team members hold weekly videoconferences to keep up with the SAP rollout's progress.

Bob Pellicciari, vice president of human resources, also expects a continued joint commitment between IS and HR to roll out an SAP HR system. So far, the partnering has worked well. "All along, we've had common objectives. There's been no

distinction between IS and HR on this project team," he says.

THE RIGHT MEASUREMENTS

HOW DOES AN IS DEPARTMENT know it is providing good service? It keeps communication flowing through the business units. "If my business units weren't getting what they wanted, I would hear about it fast,"

There's Help Out There

Microsoft demonstrates that outsourcing its help desk doesn't mean compromising its service standards

INTERNAL CUSTOMER SUPPORT, particularly the help desk, is where an organization's IS department and its business users interact the most. It can be an IS reputation maker or breaker. "In most companies, IS loses its credibility on the desktop in delivering basic services," says Diane Tunick, senior research analyst in management of technology at Gartner Group Inc. in Stamford, Conn. "Ninety to 95 percent of the people who are dealing with IS deal with it through their desktop screens."

So why the heck would anyone outsource help desk staff?

The reasons are the same as those for outsourcing any other function—cost savings and staffing needs. CIO-100 honoree Microsoft Corp. has a reputation for excellent internal customer support, yet it outsources its help desk. Microsoft Vice President and CIO John Connors explains the rationale: "Our employee compensation and benefits are dramatically better than those of the outsourcing vendor, and our campus facilities are very expensive. Having the burden of carrying the full-time head count of the help desk would be far more expensive for us than it would be for an outsourcer." Furthermore, hiring and keeping good technicians is difficult, especially in the booming economy of the Seattle area. Microsoft would rather offload that hiring and administrative burden to its North American outsourcer, Entex Information Services of Rye Brook, N.Y.

But why would a company like Microsoft, which practically prints money, be so adamant about setting a low-cost help desk benchmark? The answer is marketing. "We have to be the best in the world on what it costs to run a back office and help desk because we're a Microsoft software shop," Connors says. Microsoft salespeople use Connors' back-office cost numbers in their pitches. It wouldn't look good for Microsoft to spend a fortune helping its own employees work with the platform it created. And in fact, Connors says, Microsoft will spend less to support its North American desktop users in the fiscal year



begun last month than it did in fiscal 1995, even though the number of users has increased by 40 percent. "That's the figure that gets Bill Gates' attention more than anything else," Connors says.

Ensuring that Entex delivers the high quality expected is another challenge for Connors, especially with his aggressive goal of acknowledging all user e-mail messages within one minute and returning all phone calls within an hour. Although Entex is the first point of contact for internal customers, if a tough problem arises, Entex turns it over to Microsoft's product specialists and technicians. Also, Entex provides monthly reports to Connors' staff about problem patterns. "We can analyze what's driving repeat calls or long-duration calls," Connors says. "We'll also see what areas are creating a huge demand on the help desk."

That mechanism for communicating problems and patterns to Microsoft is essential to success, according to Tunick. "You need to make absolutely sure that the relationship between IT management and the business users is preserved and that the outsourcing vendor isn't the only one who finds out what's going on in the business," says Tunick.

So far, help desk service levels have improved since outsourcing. Before the transition began in July 1995, only 15 percent of problems were resolved on first contact. That rate is up to 60 percent today. Customer wait times have dropped from three minutes to half that in the same time period. But Microsoft hedges its bets that Entex will keep delivering—it owns an equity stake in the company.

—R. Pastore

SET

MasterCard and Visa, in partnership with IBM and other companies, created SET (stands for Secure Electronic Transaction), an open industry standard allowing secure credit card transactions over the Internet.

says F.H. "Mickey" Lauchert Jr., group president, industrial chemicals. "I'd see numbers or reports; I'd hear complaints."

But that kind of executive barometer certainly isn't enough. Ongoing formal measurements are necessary to ensure continuous improvement in internal customer support. The biggest caveat here is that IS performance metrics are not necessarily equated with customer satisfaction, says Diane Tunick, senior research analyst in management of technology at Gartner Group Inc. in Stamford, Conn. To have real meaning, the metrics need to reflect the business context and impact of what's being measured.

Rubin recalls a debate within IS on how to measure IS performance: Should they measure system response time? Should the goal be a subsecond response, or is that unnecessary for most users? Where should they measure it? At the server level? The desktop? After a while, Rubin asked one of those "of course" questions: "Why don't we ask the user?" The result was a satisfaction rating screen that pops up as users log off each day, asking them to rate from one to five their satisfaction with system response time and service. (The rating classification is familiar and meaningful to all because it's the same one used in personnel performance reviews.) If log-off satisfaction ratings start to slide, someone from IS pays a visit to the people in that area to find out the problem. If a fix makes economical sense for the overall business, then IS will do it.

Not content to rely on surveys for continuous improvement, IS staff members aggressively solicit feedback in person on their services. "Bob [Rubin's] always looking for feedback and not necessarily pats on the back," Bromley says. "He asks me how things are every time I see him." Bromley also is besieged with check-in calls and visits from IS trouble-shooters working on specific problems, including call-backs from help desk staff.

Another proponent of measurement is the help desk itself, which is the first line of defense in any internal customer support operation. Every metric is designed to help improve the response time of the help desk staff, which handles 1,200 incidents per month. Measures include the number of cases

open and closed, percentage of problems resolved in one call, number of abandoned calls (user hang-ups), backlog level and number of complaints. Desk-side technicians leave rating cards behind, asking users to rate the service from the standpoint of promptness, quality of the resolution and technician professionalism. Weekly reports flag help desk problems that have been languishing unresolved for three weeks or more. Those get the attention of John Hirt, director of client services, who meets with the appropriate parties to help move things along.

***"If you train
someone on
something they
won't use for
six months, it's a
waste of time."***

—ROBERT RUBIN

How does the help desk turn its measurements into action? Some examples: Hirt saw that abandoned calls were highest between the hours of 11 a.m. and noon. So he reassigned some help desk staff from a less problematic time period to the late morning shift. And last year, temporary contractors were hired to offset a spike in backlog levels in an effort to head off complaints.

By using temps and shifting staff hours rather than adding resources, Elf Atochem improved its help desk support without throwing money at the problem—a luxury the company doesn't want to afford. Another economical way to deliver better service is "knowledge packs," which Hirt is looking into. The intranet-based self-help modules cover frequently recurring problems or questions—sort of a help desk FAQ file for users to access on their own.

TRAINS ON TIME

AND THEN THERE'S TRAINING, appropriately last in this article because all too often that's where

it ends up on the priority list of IS departments. Elf Atochem is pragmatic about training: The company does it when it has to but makes sure it happens. "Training is not a reward or a punishment. We provide it when people need it," says Rubin, who believes in the just-in-time theory of training. "If you train someone on something they won't use for six months, it's a waste of time."

Team Ato has learned a lot about training since the first SAP pilots went live, especially about timing. In fact, in some cases, they don't do training until two or three weeks after the system goes live. "We found it was more effective to train some people in marketing and sales with live data that they can relate to," says Greg Pangrazio, director of the Team Ato implementation.

All of IS's good training intentions wouldn't amount to much without the support of senior executives to hammer home the importance. At Elf Atochem, the business leaders realize that and set the example. In the Industrial Chemicals Group, the commitment to training was led by Lauchert, his general manager and the business users working with Team Ato. The day SAP went live in the fluorochemicals business unit, General Manager Jerry Dziedzic was there at 7:30 a.m. to enter the first order himself.

In Health, Environment and Safety, the top executive also takes a lead in training and testing. "I spent a few hours one day myself sitting down with the people and the software to see how this thing is working. That gets a very strong message out," says Frank Friedman, senior vice president of Health, Environment and Safety. "I'm not a computer expert, and I've always taken the view that if I can use a piece of software, anyone can."

If there's any broad lesson to be drawn from Elf Atochem's internal customer support operations—training, help desk, measurement and IS-user partnering—it's that IS's customers really aren't customers. "They are colleagues; we are business associates," Rubin says. "We have a shared responsibility to make sure the company works." **CIO**

Executive Editor Richard Pastore can be reached at pastore@cio.com.



On June 2nd, IBM, Chase Manhattan Bank and First Data Corp announced the first North American SET initiative. Another IBM first in helping establish SET as the global standard for secure e-business—from the world's first SET credit card transaction to the first SET cross-border transaction.

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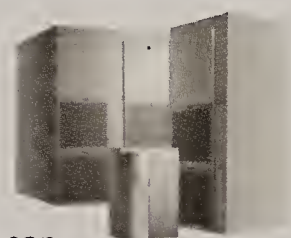
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Transactions in the Age of the Consumer

Greg Meekings, Managing Director,
Corporate Technology Group, Reuters.

The ARTS of Kraft

With innovative personnel policies and a commitment to improving management strategies, the famous foodmaker keeps its IS function running smoothly

BY PETER FABRIS



LAST YEAR, KRAFT FOODS INC.

CIO James R. Kinney was in a pickle. As part of a consolidation of company properties, the purveyor of such American staples as Velveeta and Jell-O closed its Westchester County, New York, office, which employed 120 systems developers. Kinney had hoped to keep most of the experienced programmers and systems analysts, but only 19 accepted job offers at Kraft headquarters in Northfield, Ill.; the others didn't want to leave New



Best Practices for Internal Operations

INFORMATION SYSTEMS GROUPS MUST do the following to support their ongoing operations:

- ▶ Recruit and hire talented personnel
- ▶ Retain staff by providing training and career enrichment opportunities
- ▶ Budget human resources, infrastructure and systems development projects
- ▶ Manage systems development projects
- ▶ Devise project and risk management strategies



HR Director Margaret Schweer and CIO James Kinney work hard to recruit top talent for Kraft's IS team; in-house basketball is just one of the perks the company offers.

INTERNAL OPERATIONS CIO 100

York. That left Kinney short about 100 staffers at a time when major projects, including an efficient consumer response system that tailors product lines and shelf space for individual grocery stores, were underway. Largely through employee referrals and an innovative entry-level employee recruitment program, Kraft filled the positions in six months—no small feat in today's white-hot IS job market.

In the face of intense competition for talent, Kinney can't take recruitment and retention of employees lightly. Indeed, CIOs of all stripes need to devote more attention to hiring workers, developing their careers and generally providing a place where talented technical staffers want to be. Human resources management—along with other internal operations issues such as budgeting, project planning and project management—are imperative to the success of any IS shop. After all, you have to put your own house in order before you can create systems that will benefit the business and earn praise in the boardroom.

Kraft is as sharp as its own Wisconsin cheddar at most internal operations, particularly in the personnel area, making the company worthy of one of this year's CIO-100 awards. According to Kinney, Kraft boasts attrition rates in the 4 to 6

unusual to see 10 percent turnover [at many companies],” he says. High turnover produces poor continuity in project development and reduces IS's overall competence, he explains.

TALENT SCOUTS

KRAFT'S SUCCESS AT IS STAFF retention “reflects excellence in the organization and a high-quality professional environment,” says John Henderson, professor of information systems at the Boston University School of Management. “Good people want to go there and stay.”

However, Kraft did have to scramble a bit when the Westchester office closed. The company explored familiar avenues—newspaper ads and headhunting agencies—to fill the openings, but employee referrals were the most effective means of locating experienced technical staff, says Margaret Schweer, director of human resources. Kraft IS personnel eagerly pitched in to find replacements despite no financial incentive to do so, Schweer says, a sign of their satisfaction with the company's IS culture.

Of the new hires, about 35 percent were recent college graduates, a talent pool Kraft is eager to exploit. “Five to 10 years ago, many companies only took people with four years or more of experience and said, ‘We can have our pick,’” Kinney says. As demand for IS staff has handily outpaced supply, he says, that no longer holds true: “You have to have a pipeline of entry-level people, and it's been our experience that entry-level people are capable.”

The recruiting process begins with internships and co-op programs for college sophomores and juniors. IS personnel talk with scores of prospective interns

on campuses each year and invite 60 to 80 students for second interviews and a tour at Kraft headquarters. In fact, Kraft IS staffers play a bigger role in IS recruiting than HR personnel do, Schweer says. “IS people want to talk to IS people,” she explains. “They all want to speak with people they'll be working for.” Each recruit interacts with both managers and new associates during the two-day interview and orientation process. But prospective interns meet with many different IS groups so that the recruits can decide where they would fit in best. “We try to give [the interns] access to as many IS people as we can [during recruiting],” says Schweer. “They see a lot of different people, unlike the normal recruiting process where you see one person and then you're out of there.”

Once accepted to a three-month internship or six-month work/study co-op program, students delve into meaningful activities such as monitoring electronic data interchange systems or customizing queries for human resources databases—not fetching coffee or filing

***Kraft's success
at IS staff
retention
“reflects excellence
in the organization
and a high-
quality professional
environment.”***

—JOHN HENDERSON

papers. And the confidence the company shows in them has long-term benefits for Kraft. “One of the reasons I chose to work for Kraft is because I learned more in one summer here than I did in three co-op sessions with another company,” says Levita Kent, a business consultant in IS who worked on EDI systems during a 1994 internship.

When their internships wind down, students present what they've accomplished before a large group of IS staff.

Kraft Foods Inc.

Headquarters: Northfield, Ill.

Business: Food manufacturer

CIO: James R. Kinney

CIO Reports To: William B. Chiasson,
Senior VP, Finance & Systems

Revenues: \$27 billion (\$16 billion
North American division)

IS Budget: About 1.2 percent of total
North American revenues

Employees: 40,000

IS Employees: 1,000

Web Site: www.kraftfoods.com

percent range. That is notable, says Andy Zaleta, vice president and managing director of AT Kearney's executive search practice in Boston. “It's not



asier

calculator.

Not too long ago, companies stored their data the way they stored their hard goods—in out-of-the-way warehouses where the real estate was the cheapest. But enterprises of all types are becoming increasingly aware that accessible, centrally located data warehouses are crucial cogs in the business machine. "Storage is becoming much more strategic as a component in the IT environment," says P. J. White, director

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to collect precious data
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A Taste of Its Own Medicine

At pharmaceutical giant Merck, IS got a prescription for success from its drug developers

DEVELOPING IT SYSTEMS, LIKE developing drugs, is complicated. Both require rigorous planning and monitoring to ensure that the product is produced on time, on budget and works as advertised. It's natural, then, that IS at CIO-100 honoree Merck & Co. Inc., one of the world's largest pharmaceutical companies, prescribed its drug development project management methodology to treat an ailing IT project development procedure.

Though CIO Charles Popper says IT project management wasn't in critical condition, it certainly needed a healthier regimen. So Popper took the stage development methodology Merck uses in making pharmaceuticals and adapted it for IS. The process begins with a committee of senior business and IT managers that reviews each project and assesses costs and benefits according to business needs and goals—improving manufacturing productivity by a certain percentage, for instance. The committee then draws up a contract with the project team that includes the project's timetable, costs and projected benefits, and schedules stage reviews to monitor progress at prede-

Continued on Page 88

Then it's up to IS managers to choose who will get a full-time job offer. "Every student we want to offer a job is somebody's responsibility," says Kinney. A manager and a new associate calls each intern regularly to answer questions and provide gentle persuasion to choose Kraft after graduation.

That strategy works. Courtney Curtis, now a senior business analyst, said she was attracted to Kraft in part because IS staff called her several times after the initial recruiting phase to see if she had any questions or concerns about working for Kraft. She was impressed by the company's interest in her and especially appreciated getting input about the Kraft culture from a recent hire. "It was great to get perspective from somebody close to my age," she says. Kraft's efforts to retain people like Curtis are succeeding despite stiff competition from other companies and consulting firms. Says Kinney, "Our conversion rate [running from 50 to 75 percent per year] from interns to full-time employees is very high. Fundamentally, that's why we do it."

WHAT'S KEEPING THEM

IN THE FRENZIED IS JOB MARKET, after you attract staff members it's a major challenge to keep them. For new recruits and veterans alike, salary and benefits—those bread-and-butter concerns—are important, but usually they aren't competitive issues for Kraft. The company pays IS workers accord-

"Every student we want to offer a job is somebody's responsibility."

—JAMES KINNEY

ing to industry averages, and it's unusual for IS employees to leave the company solely to get a higher salary elsewhere, Schweer says. But money does matter when both new and experienced recruits contemplate several job offers. Com-

petition is so intense for IS employees that many companies, including Kraft, offer signing bonuses to attract new employees. "It's getting to be like the NFL draft," Kinney says. "I hope it doesn't get to the point where they say, 'You'll have to talk to my agent.'"

Kinney's boss, William B. Chiasson, Kraft's senior vice president of finance and systems, says he believes competition for technical talent will continue to intensify, and that concerns him. Chiasson worries that the consulting industry, which typically pays higher salaries than Kraft, might become more attractive to Kraft personnel. He's heard rumors that Andersen Consulting alone will hire as many as 10,000 people over the next few years. "They will likely target some of our people," he says. Recruiting and staff retention are top IS priorities, he says, and he is pleased with Kinney's efforts to win the increasingly challenging staff recruiting and retention wars.

Kraft's attention to IS employees' career development is instru-



Merck CIO Charles Popper

Solutions Spotlight

PATROL® MANAGEMENT SUITE OF PRODUCTS

Managing Re-Systemization

How U S WEST Dex moved from a mainframe to a distributed environment with PATROL

US WEST Dex, one of many U S WEST companies, sells Yellow Pages advertising, related mailing lists and other products that are derived from telephone directories. In all, they publish over 300 directories with over 42 million printed copies.

Handling all of this publishing and taking care of nearly half a million USA and international clients calls for complete distribution of data 24 hours a day. All of the company's critical applications must be available to thousands of users.

The original mainframe needed upgrading and the decision was made by U S WEST Dex management to move to a distributed environment. Over a period of many months, operational processes were decreased on the mainframe and increased on the distributed systems.

U S WEST Dex created a new group called the "System Management Center" (SMC) to recommend products to help them ease and manage the transition. As interaction with the SMC progressed over a couple of months, one partner relationship between two vendors stood out, that of Hewlett-Packard and BMC Software.

"We found that the partner relationship between these two companies was able to satisfy a broad range of our needs. The joint presentation of their individual products tended to complement and even strengthen each other. We saw clear advantages to both vendors working with us as a single team rather than separately. We awarded them our contract jointly and plan to order more later this year," explains Project Manager Henry Vargas of U S WEST Dex.

"Our business-critical applications have been re-architected into the client/server model to help give us a competitive advantage. We use the Hewlett-Packard systems due to

their mission-critical capabilities, high performance and the ability of Hewlett-Packard and BMC Software to put together a solution."

These products will provide U S WEST Dex with the ability to collect information from their new distributed computing environment and process it to report the status of individual elements within their IT environment. They will be able to graphically show the current status of all elements of their enterprise, including networks, systems, applications and databases, and manage them through one console. They should realize a seamless, easy transition of critical systems with reduced user downtime.

"We are pleased to be working with BMC Software on this project," said Business Development Manager Travis Muesing, of Hewlett-Packard. "We have worked with them before and have always felt that our products, services, support and education complement each other. Together, we can always provide our customers with a complete, timely and cost-effective solution to their integrated network and system management needs."

U S WEST Dex plans to incorporate more of the Hewlett-Packard and BMC Software products to provide additional support for IT operations, performance monitoring and IT administration.

"HP

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Continued from Page 86

terminated milestones. Both stage reviews and project contracts are hallmarks of Merck's pharmaceutical development methodology. Technical review teams comprising IS personnel involved in the project and some architecture and other specialists not assigned to the project also evaluate progress periodically, adding a dose of objectivity.

That standard procedure is an improvement over the former system, which was haphazard and depended almost exclusively on the organizational skills of individual managers. For now, an elite group of managers takes on the largest, most difficult projects, but Popper wants to improve the skills of all managers. With the stage development methodology, there's a common formula for all technology initiatives that makes it easier for project managers of all abilities to fulfill their objectives. That formula includes a project risk management strategy that is less a methodology than it is common sense, Popper says. Simply put, the goal is to understand events that are beyond the control of the project management team, such as delays in hardware deliveries or snafus in other projects that require workers from the project team. Project managers must identify and deal with these risks in the planning phase.

Last year, about 120 IS project managers took courses to help them understand Merck's improved IT management methodology, and the company trained business managers responsible for overseeing project managers to better manage their IS people, Popper says. That training has helped, but there's still work to do. "We are steadily improving, but we want to be excellent at this," Popper says.

Ultimately, the training initiative will be judged on the basics: delivering reliable results on time and on budget. That's no different from any other business undertaking at Merck, Popper says: "IT projects are simply business projects that happen to have an IT component."

—P. Fabris

mental to winning those wars. For example, IS managers regularly swap personnel among development teams because Kraft's decentralized IS structure, which houses IS units within business units, otherwise would preclude them from learning skills outside their business area. Those kinds of opportunities attracted Mark Froseth, Kraft's director of customer service systems, to Kraft and have kept him there for 15 years, he says. As an IS staffer, Froseth has worked with Oscar Mayer Foods, Kraft's pizza division and customer service for Kraft Foods, and he even spent a year in a non-IS position as a distribution supervisor. Kraft's IS staffing policies, he says, "really help you understand the huge diversity of options you have here, not only in the kinds of systems but also in terms of the variety of business processes." That's why Froseth remains loyal to the company despite periodic headhunting calls. "My answer is always the same: I like the environment; I like what I'm doing, so there's no reason to go anywhere else," Froseth says.

Encouraging employees to move among IS groups to learn about different businesses, platforms and systems is an enlightened policy that likely contributes to Kraft's low IS turnover rate, Zaleta says. Programmers, systems analysts and network managers gravitate to organizations that provide training and experience in new technologies, he says.

Managers take steps to ensure that their technical staff members constantly expand their knowledge base rather than just post new opportunities and let employees be completely responsible for their career development, Schweer says. "How else do you create the next CIO or department managers if you haven't had people exposed to a broad range of technologies and applications?" she asks. And IS managers gain greater flexibility when making staff assignments—it's easier to staff projects when there is a large pool of candidates with multiple skills to choose from rather than small groups of specialists.

A FEW IMPORTANT EXTRAS

OF COURSE, EVEN COMPANIES with the best staffing practices can lose talented staff members.

To manage that risk, "you want to develop a deep bench," Zaleta says. Kraft is doing that with its recruiting and retention policies, but because of chronic skills shortages, the company augments its staff with some free agents. Kraft has about 220 contract workers—many of whom specialize in hot technologies such as client/server and Oracle

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no reason to go
anywhere else."***

databases—among its 1,200 IS staffers.

Kraft typically uses contractors for 23 percent of its systems development worker hours. After the Westchester office closed, Kinney exceeded that figure by 37 percent. Already unhappy with how the company managed contractors, Kinney says the situation worsened with the glut of hired guns. "We were in a kind of chaotic condition," he remembers. Project managers, who used to be responsible for hiring contractors to staff their own development teams, spent too much time recruiting contractors, fielding sales calls from contracting firms and performing administrative tasks that sapped time from their primary task of completing projects, Kinney says. To make matters worse, they unknowingly bid against each other for the same contractors. And in some cases, contractors charged the company different rates to hire the same people.

The recipe for improvement was a

Technology Profile

PATROL® MANAGEMENT SUITE OF PRODUCTS

From Desktop to Enterprise

Leaders in I/O Technology

The demand for device driver portability between operating systems and host platforms, combined with increasing requirements for intelligent, distributed I/O processing has led to the development of the Intelligent Input/Output, or I₂O specification. BMC Software and Intel Corp. are working closely with the I₂O Special Interest Group (SIG) to bring I₂O-compliant technologies to market, including integrating PATROL Management solutions with the Intel i960RP I/O processor.

"The importance that the Intel/BMC relationship brings to the market is that BMC innovation in I/O technology naturally makes them a leader in this collective new I/O-centric industry," states Alan Steinberg, Director of New Business Development, Connected P.C. Division at Intel. "Currently we have companies coming in from the desktop and from other areas of the industry that don't necessarily have the Enterprise experience BMC Software has to deal with the type of I/O that is needed in what could be called the new 'open mainframe' world."

Steinberg envisions a world where Microsoft will provide the main operating system, Intel will provide the hardware architecture and BMC Software will contribute the key I₂O-compliant management technology. BMC Software's role will be to help architect what Steinberg calls the "highly available, highly manageable open system mainframe" on the I/O space.

Bob Beauchamp, Vice President of Strategic Marketing and Corporate Development for BMC Software, agrees. "The pervasiveness of the i960 chip in the Windows NT and NetWare environments, combined with BMC Software's PATROL technology, will empower

customers with unprecedented management and monitoring capabilities from the application to the motherboard."

Clearly, the ability to gather statistics regarding I/O is a great step forward. The PATROL Application Management Suite completes the picture by correlating I/O statistics with the applications that are utilizing the I₂O components or sub-system. This allows unprecedented optimization capabilities, such as automated load balancing, cache reallocation, and the rerouting of network traffic. All of these capabilities can be performed on demand and are based on the performance requirements of the applications.

Currently, no two vendors come as close as Intel and BMC Software in providing this comprehensive approach to I/O processing and manageability.

"We've moved into a new paradigm where I/O is as important as the central CPU technology," states Steinberg. "This shift will allow BMC to proliferate its management product line in the open systems environment. Pairing Intel I/O technology with PATROL is just the very beginning. It's the first product of many, as this new I/O-centered technology emerges into the marketplace, and we think it's going to be an exciting ride."

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A story
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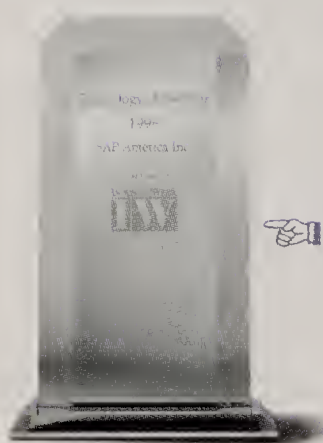
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SAP introduces R/3™, client/server software destined to change the way businesses do business.



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By making R/3 Year 2000-compliant, SAP solves the biggest problem facing the computing world years before it's a problem.



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R/3 3.1 named "Technology of the Year" by *Industry Week* magazine.



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With the release of R/3 3.1 Internet, SAP changes the world of business. Again.



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SAP addresses the unique needs of emerging corporations with the introduction of the Certified Business Solutions (CBS) program.



1997

A record 750 customers go live in one month.



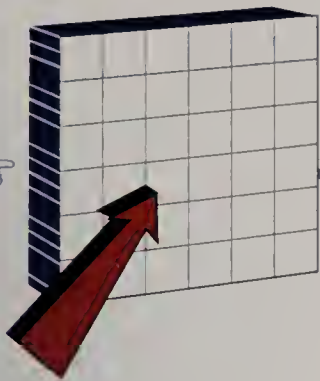
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25,000 Motorola employees go live with the R/3 HR and Payroll applications, establishing a foundation for managing employee information worldwide.



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Reebok adds SAP Retail to its manufacturing solution to create a truly streamlined, global supply chain.



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SAP gains momentum while the customer installation base grows to over 1,900.



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SAP makes headlines by implementing R/3 for *The Seattle Times* in 88 days.



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SAP voted one of the Top 10 software vendors by *Software Magazine* 3 years in a row.



1996

SAP named the number one company of the *Manufacturing Systems Software Top 50*.



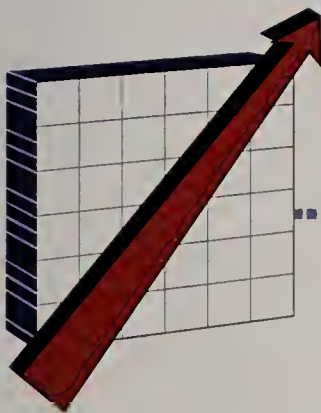
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AcceleratedSAP program introduced, making rapid implementation a reality.



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SAP opens the door for more companies worldwide to work their best with the release of R/3 industry solutions.



1997

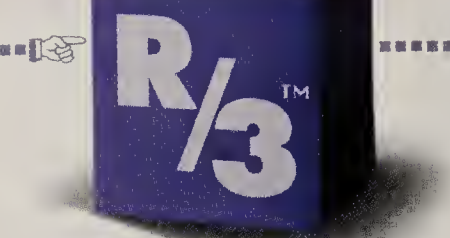
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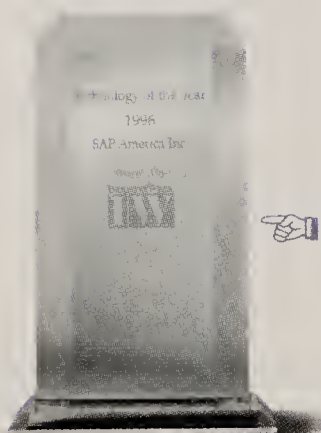


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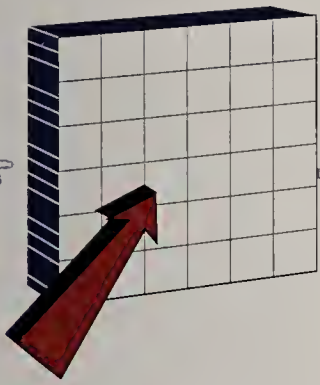
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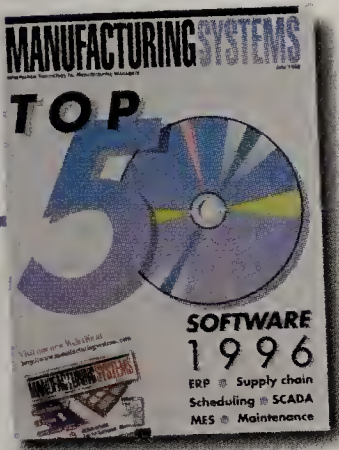
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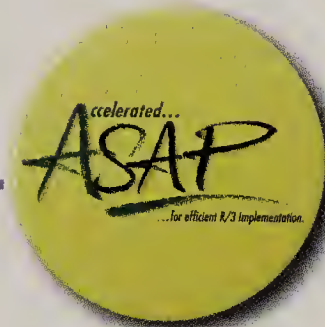
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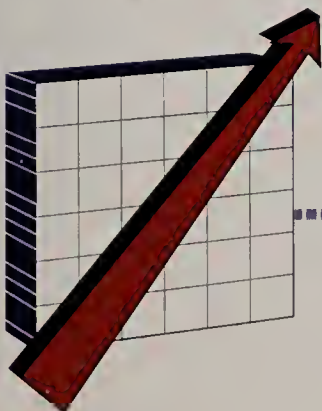
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Banking on BONDS

When an IT organization is lined up perfectly with business goals, the system is the business and the business is the system

BY TOM FIELD



SAY "ALIGNMENT" TO MOST PEOPLE, and they think "cars." Donald Boudreau is no exception. Ask the vice chairman of

The Chase Manhattan Corp.'s consumer credit businesses to illustrate the benefits of the bank's enterprisewide alignment of IT with business strategies, and Boudreau immediately points to the auto finance unit. In collaboration with their business-side peers, Information Technology & Operations (IT&O) members recently built a customized database that alerts

Best Practices for IT/Business Alignment

IN ORGANIZATIONS THAT HAVE achieved IT/business alignment:

- ▶ IS management is involved in strategic planning for the business as a whole
- ▶ IT strategy supports business goals and can adapt to changing business conditions
- ▶ IS has applied resources toward functions that are critical to competitive advantage
- ▶ Internal customers take an active role in managing IT
- ▶ Specific applications make a significant contribution to bottom line



At Chase, CIO Denis O'Leary ensures IS staffers, such as the Global Services Group's Lori Hricik, get a seat at the table wherever business strategy is set.

IT/BUSINESS ALIGNMENT

CIO 100

customer service representatives when an auto lease is within six months of expiration. The system's data analysis tools then allow reps to determine the car's value and whether Chase can reap greater profit by selling the vehicle at auction or to the lease customer.

Previously, Boudreau says, reps couldn't make such determinations without shuffling a lot of paper, securing a handful of administrative sign-offs and stalling the customer with at least one "I'll get back to you." It was easier and more cost-effective just to let the cars go to auction. Now, with quick, accurate information at their fingertips, reps can negotiate direct customer sales in a single phone call. Chase sells 46 percent of its leased cars to consumers; 46 percent of those sales are financed with Chase loans.

"This," Boudreau says, "is real business."

CIOs know they have to achieve the Holy Grail of IS organizations, real IT/business alignment, but they often struggle just to define it. In IT guru Paul A. Strassmann's most recent book, *The Squandered Computer* (The Information Economics Press, 1997), he defines IT/business alignment as "the capacity to demonstrate a positive relationship between information technologies and accepted measures of performance" (see "Off the Shelf," Page 32). Gaining that capacity is the trick; it requires organizations to ensure that their CIOs are plugged into the needs of senior management, that IS staffs speak the business

language and that IT is employed not just to serve but even to help set strategic business goals.

From the top of financial services giant Chase Manhattan's organization, where CIO Denis O'Leary sits among the bank's most influential senior managers, to the branch offices where IT&O employees work alongside business partners to serve internal and external customer needs, CIO-100 honoree Chase has institutionalized day-to-day IT/business alignment. "If you're working in IT at Chase, you'd better have a mind-set of how to help the company turn a buck," O'Leary says.

HOW ALIGNMENT WORKS

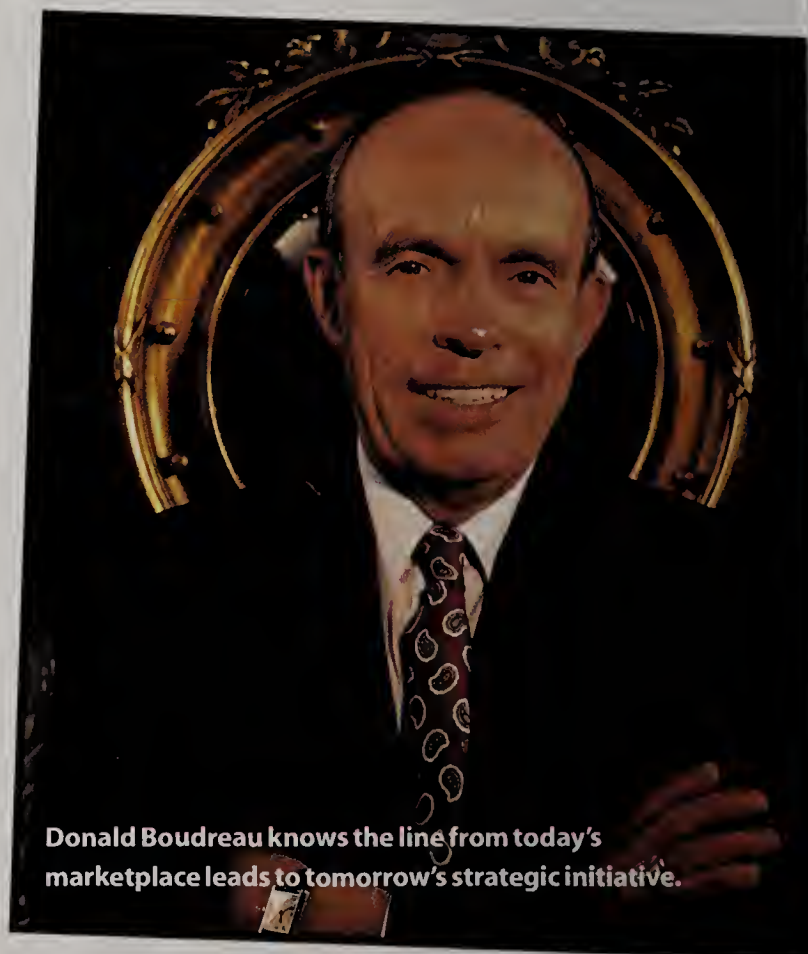
SINCE LAST YEAR'S \$12.9 billion merger with Chemical Bank, Chase management has made it a priority to align its IT organization with business strategies to maximize the global corporate and consumer bank's \$1.8 billion annual IT investment. After all, in an industry where information increasingly is the coin of the realm—where corporate customers rely on electronic data interchange (EDI) transactions and consumers routinely pay bills and manage checking accounts via the Internet—this level of IT/business alignment is key to maintaining and increasing market share. Chase alone flows \$2 trillion in funds each day, up to \$16 million in checks each night, and there are no doubts in the executive suite about IT's role in the operations. "IT is the difference between success and failure," Boudreau says. "What we do in

the marketplace tomorrow is a direct result of what we learn from the marketplace today."

Other examples of Chase's IT/business initiatives are found in these areas:

- Mortgage banking, where IT&O helped reorganize the front office by deploying laptop computers and customized applications. When fully operational, the bank expects to cut the average cost of loan origination by approximately 30 percent.

- Commercial lending, where in 1994



The Chase Manhattan Corp.

Headquarters: New York
Business: Financial services
CIO: Denis O'Leary
CIO Reports To: Thomas G. Labrecque, President & COO
Assets: \$336 billion
IS Budget: \$1.8 billion
Employees: 67,700
IS Employees: 7,500
Web Site: www.chase.com

IT&O partnered with Chase's Middle Market Banking to build a relationship management system that offers a consolidated entry point to customer information. Since the system was rolled out, the bank's portfolio profitability has increased by 27 percent, and the system secured Chase a 1997 CIO Enterprise Value Award (see "Banking on the Relationship," CIO, Feb. 1, 1997).

- Check processing, where Chase is using IBM Corp. technology to reengineer the entire operation. With IBM's imaging technology, checks that once required 12 individual hand-offs during processing will be handled only twice once the rollout of the new system is completed. That five-year, \$50 million project started in 1995. Ultimately, Chase's corporate customers will be giv-

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Aligning Online

There are no stock answers when a brokerage company discovers it is actually a technology company operating on the World Wide Web

THREE YEARS ago, Charles Schwab & Co. Inc., the brokerage subsidiary of San Francisco-based The Charles Schwab Corp., had no employees devoted to Internet software development. Today, 100 technologists are dedicated to Schwab's new electronic brokerage enterprise and e.Schwab, the company's 2-year-old online investment tool. Schwab's total online brokerage business has attracted 700,000 active accounts and \$50 billion in customer assets—nearly half of what Forrester Research Inc. of Cambridge, Mass., estimates to be the entire \$111 billion electronic brokerage industry.

This quick deployment, Schwab executives and analysts say, demonstrates how IT/business alignment improved the company's bottom line.

"We are a technology company that happens to be in the brokerage business," says David S. Pottruck, president and CEO of Charles Schwab & Co. His perspective is not just hype. Since Charles R. "Chuck" Schwab founded the company in 1974, the discount brokerage has strived to turn its IT investments into improved customer service—a key differentiator in a business where profit margins are thin, volume is high and a little efficiency can go a long way toward ensuring controlled costs and customer loyalty. Because IT is vital to Schwab, Executive Vice President and CIO Dawn G. Lepore reports directly to Pottruck and serves on the company's top management committee. Further, since Schwab reorganized in 1995 from one

big business into six smaller business enterprises, IS has been divided similarly. Now, in addition to a central IS organization that manages architecture, each of the enterprises has a dedicated IS staff headed by a senior IS executive who reports indirectly to business unit managers and directly to Lepore. "There's a role my staff can take in helping people understand and apply technology," says Lepore, who's been CIO since 1993. "We have to ask, 'What does this business need, and what can I do proactively to help this business?'"

Beyond the creation of a new LOB, e.Schwab, the benefits of Schwab's IT/business alignment include:

- **I Want Information Now (IWIN)**, a client/server application that gives Schwab's customer service representatives a single interface to customer account information. Incoming calls, which used to absorb up to 30 minutes, now can be handled in two.

- **VoiceBroker**, a voice recognition tool that satisfies customers' call-in requests for stock quotes. The system recognizes 16,000 variations on the names of 5,000 registered stocks, so customers can request a quote for "International Business Machines," "IBM" or even "Big Blue" and get the same answer—at one-fifth what it costs Schwab employees to provide the quotes personally.

"In an era of ever-increasing customer expectations, Schwab not only is

able to keep up, but it exceeds expectations and delights its customers," says Thornton May, vice president of research and education at Cambridge Technology Partners Inc., an information technology solutions provider in Cambridge, Mass. As an example, he points to the company's ability to meet customers' needs in person, via telephone and over the Internet. As for IS, "it's a 'Mensa hoe-down' at Schwab," May says. "What [IS professionals] do is supremely relevant to the business."

The company and its bottom line continue to grow, and top IS executives receive top salaries and stock options—just as their business-side counterparts do. There also is a greater sense that IS employees' work is helping not just to support but drive the business strategy. "I'm a significant owner of the business strategy," says Gideon Sasson, senior vice president in charge of IT within the new electronic brokerage business. "In other organizations, there is an IS agenda and a business agenda, with compromises between the two. Here there is a business agenda, which both IS and the business own."

—T. Field

en a choice of receiving their bank statements via paper, computer disk or CD-ROM.

Those alignment successes have caught the attention of banking and information technology observers alike. Thomas K. Brown, an analyst with Donaldson, Lufkin & Jenrette Securities of New York, calls Chase Manhattan a

"must-own" stock. "Chase can reap significant competitive advantages by leveraging its scale, brand and utilization of customer information, all of which are enhanced by [Chase's] superior technology," Brown reports. And of the 141 financial service businesses that Andersen Consulting recently studied, Chase Manhattan was among the high-

est-scoring companies (as was fellow CIO-100 honoree The Charles Schwab Corp., profiled above). "Both companies start with technology as a strategic weapon, not just a business strategy enabler," says Michael May, managing partner of strategy in Andersen's New York-based Financial Services Industry practice.



Charles Schwab
CIO Dawn Lepore

CIO 100

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CREATING ALIGNMENT

BECAUSE PRESENT-DAY CHASE IS the product of two major mergers—the former Chemical Bank took over Manufacturer's Hanover Corp. in 1991 and then last year absorbed Chase Manhattan—the current IT&O organization comprises the best IT professionals and processes of three banks. Overseeing that all-star organization is CIO O'Leary, who since the Chemical/Chase merger has concentrated not just on melding the IT organizations but on developing a new enterprisewide management structure that ensures his IT&O employees a seat at the table wherever business strategy is set. With a background in business—he started his career as a Manufacturer's loan officer in 1978 before working his way up to CIO of Chemical in 1993—O'Leary strives to keep the bank's business needs top-of-mind. His office, on the same floor of Chase Plaza as CEO Walter V. Shipley's, is lined with business books and banking periodicals, and when the topic is metrics, the conversation never is about “function points” or “uptime”; it's about customer satisfaction and the bottom line. “This is a business partnership,” O'Leary says.

In the new Chase organization, O'Leary sits on the bank's Policy Council, exclusively comprising the bank's 25 most senior executives. Here, O'Leary looks for opportunities to partner with his business-side peers to assure IT&O a high-level role in strategic planning. Within IT&O, O'Leary has created a hybrid management structure that keeps other IS professionals similarly close to the businesses they serve. O'Leary supervises two groups of IT executives: the IT&O professionals who tend to the basic, enterprisewide IT functions (networks, desktop technology, et al.) and report solely to him; and a second group of executives assigned to Chase's strategic business units and who report both to O'Leary and the business unit presidents. He brings together 200 IT professionals from throughout IT&O and the business units for regular meetings of Chase's new Technology Leadership Council. They share best practices, disseminate information and recommend policy changes. The shared objective of these meetings, O'Leary says, is for people to think less about fiefdoms and more about the needs

of the global operation. “Alignment starts with the foundation of this mind-share,” O'Leary says. “Don't be tied to an org chart or a particular organizational silo; think Chase.”

***“If you're working
in IT at Chase, you'd
better have a
mind-set of how
to help the company
turn a buck.”***

—DENIS O'LEARY

Day-to-day, Chase's battle for IT/business alignment is fought on “the line,” as bank executives refer to the offices where bank employees interact daily with external and internal customers. In the Global Services Group, for instance, which handles payment and treasury issues, the IT employees make field visits to bank customers to help design electronic transaction systems to meet the customers' technological capabilities. “What we bring to the table is our ability to integrate with what the customer needs to solve their problem,” says Lori Hricik, a Global Services Group senior vice president.

As a manager of her unit's IT employees, Hricik spends a lot of time training people in strategies and customer satisfaction. “They know they're all part of a chain, and every link of the chain is critical to the business,” she says. And as a member of the group's senior management team, Hricik says, “I'm at the table. I do feel like I'm a business manager as well—I'm the linkage between my business and technology partners.”

Alignment also is achieved in Boudreau's consumer credit businesses, where IT professionals work hard at meeting the needs of their fellow line workers. In the credit card customer service group, the IT staff built a database that gives sales executives instant access to customer credit histories. Now, if a customer calls and asks Chase to meet or beat a rival credit card company's lower interest rate, sales reps quickly can

call up the history of the account, terms of the agreement and past revenue from the account, and decide on the spot based on preset parameters whether Chase can offer a competitive deal.

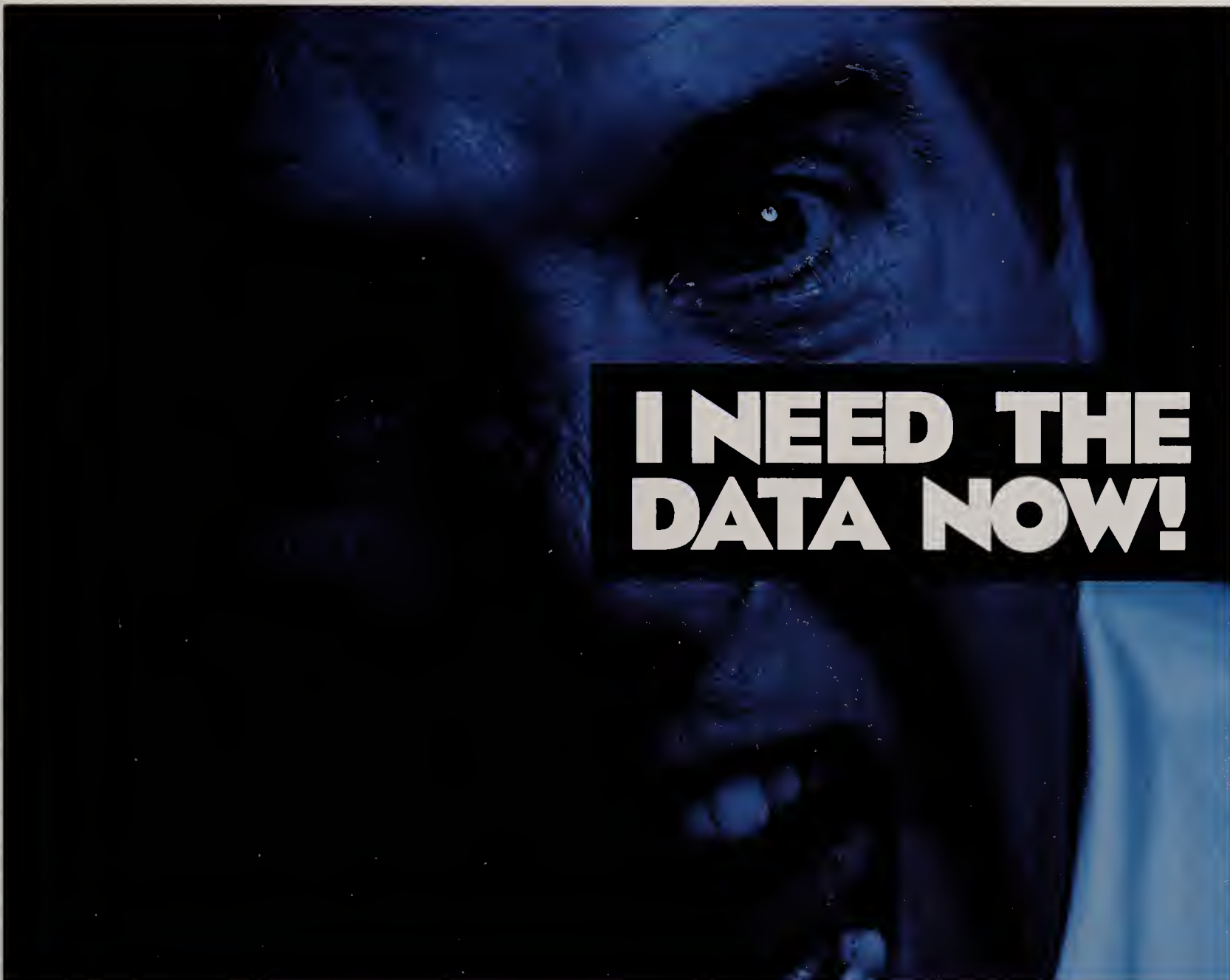
As for metrics, Chase tracks customer satisfaction and posts the feedback for IT professionals to see. Agreed-upon benchmarks that IT&O must meet to satisfy customer needs are set not by IT&O but by the customers. “The customer has to decide what determines success in their market,” O'Leary says. The double benefit of this approach is that it gives IT professionals a greater customer service perspective, and it encourages bank managers to evaluate IT workers on the same merits as they would any other business professional. “There is no distinction in my mind among the IT professional, marketing professional or operations executive,” says Boudreau. “They're all part of the line.”

LINING UP THE FUTURE

O'LEARY RECENTLY CREATED Chase's Centers of Excellence (COEs), cross-functional groups chartered to help employees focus on new technologies that the bank has determined critical to future success. Image and workflow, Internet/intranet and call centers are among the 12 initial COEs established since the Chemical/Chase merger. The goal, O'Leary says, is that if a Chase manager wants to know about, say, imaging technology, the manager can approach the appropriate COE leader who will recommend examples of how imaging is being used elsewhere within Chase's global operations.

The ultimate objective, O'Leary says, is to make IT/business alignment so ubiquitous that it's unremarkable. “We're not walking on water here,” says Boudreau. “[Alignment] isn't 100 percent done, but there is 100 percent commitment to get it done.” Chase has seen some significant progress in aligning IT with business strategies, but both O'Leary and Boudreau caution that the journey is far from complete. O'Leary says, “The view keeps improving, but the hill doesn't end.” **CIO**

Senior Writer Tom Field can be reached at tfield@cio.com.



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TOP I.T. PERFORMERS

ARMED With Intelligence

Shared knowledge is the Department of Defense's not-so-secret weapon

BY PERRY GLASSER

E

ENTERING HOSTILE TERRAIN, A SOLDIER wants a better view than the one from 20,000 feet. A soldier wants "ground truth." When the 25th Infantry Division came ashore to relieve the 10th Mountain Division in Haiti in 1994, the fresh troops knew—they absolutely knew—the ground truth of the situation. There was no learning curve for the replacements, no dangerous transition period when lives might be lost while officers learned information their predecessors already knew.

Best Practices for Innovation and Learning

AN ORGANIZATION that excels at IT-augmented innovation and learning displays:

- ▶ Substantial investments in managing information and knowledge
- ▶ Innovative use of the Internet and intranets as well as other collaborative technologies
- ▶ A strong emphasis on ongoing training and education
- ▶ A managerial group that explores and links new technologies with new business applications
- ▶ A culture that encourages information sharing

Where condition status can change faster than the muzzle speed of an M-14, quickly shared knowledge is the key to survival. In Haiti, the database created using After Action Reviews (AARs) made the transition of personnel swift, smooth and safe.

AARs are debriefing sessions during which troop experiences are recorded in a variety of digitized sound and visual media to be delivered to any soldier who would benefit from access. "In the modern armed forces, where it is recognized that withholding information can get somebody killed, the purpose of IS is to eliminate time and space as constraints to the efficient application of knowledge," says John C. Henderson, professor of MIS and director of the Systems Research Center at Boston University.

Because that kind of efficiency requires planning and training, a soldier's first AAR occurs in boot camp. AARs are serious business; an officer inept at identifying "lessons learned" and "who needs to know" components of an AAR is evaluated as failing in leadership skills. And line troops increasingly are trained through the use of computer simulations; graduates of the Naval War College can't be seaborne until they have passed computer wargaming. It may sound like zapping bad guys in 25-cent arcade video games, but as retired Lt. Gen. Emmett Paige Jr., assistant secretary of defense for Command, Control, Communications & Intelligence (C³I) until May 1997, says, "this is no game. It is serious business. The lives of war fighters and overall management of this department in peace or war on an hour-to-hour basis depend heavily on effective use of information technology. The money is big, and the payoff in terms of war fighting will be extremely significant." (The acting assistant secretary of defense for C³I is now Joan Dempsey.)

At the Department of Defense (DoD), a recipient of this year's CIO-100 award honoring top-performing IS organizations, the stakes for the efficient identification, distribution and application of knowledge are human lives and national security. Most CIOs would agree that an organization skilled at employing IS

for innovation and learning enjoys a significant competitive advantage. Paul A. Strassmann, former director of defense information at the DoD and now adjunct professor in the School of Information Warfare at the National Defense University in Washington, knows the importance of advantage. When discussing the contemporary mission of the DoD, Strassmann quotes Sun Tzu in *The Art of War*: "The superior warrior wins without fighting by making the enemy give up when faced with certain defeat."

There were no American casualties in Haiti. These days, the superior warrior wins without fighting because the superior warrior is part of an enterprise that applies knowledge.

THE LEARNING ORGANIZATION

THE LEARNING ORGANIZATION must have the right reflexes—in other words, the right corporate culture—to respond appropriately to a rapidly changing environment. "The effective learning organization is one in which users consider the groupware of the environment as the first choice for communication, a place where people have come to see the value of giving and taking knowledge," says Ian Campbell, director of collaborative and intranet computing at International Data Corp. (a sister company of CIO Communications Inc.) in Framingham, Mass.

Campbell notes three hallmarks of an aggressively collaborative environment: Users are encouraged to add to and take from the database; the quality of knowledge within the database is subject to ongoing review; and the organization addresses individual compensation for participation in the database. Most enterprises are "overly dedicated to abstractions and not experience," says Larry Prusak, managing principal of

knowledge management at IBM Corp.'s Consulting Group in Boston. "You have to have both, but the unquantifiable nature of some experience means it does not make it into a database. That's a terrible error."

If those are the measures of the organization that excels at learning and innovation, it's no surprise that Chris Hoenig, who is familiar with the DoD because of his role as director of information management and technology at the U.S. General Accounting Office, says, "a lot can be learned from the DoD. They are cutting edge for logistics, crisis management, collaboration and decision support." And Prusak says he particularly admires the military's efforts to store individual soldiers' battle experiences on CD-ROMs to use when training officers. "As strategic training, the experience is a long way from those abstract X's and O's on a chalkboard," he says. "It's a change in training phi-

U.S. Department of Defense

Headquarters:	Washington
Business:	Defend the national interest of the United States
CIO:	Retired Lt. Gen. Emmett Paige Jr., former assistant secretary of defense for Command, Control, Communications and Intelligence (C ³ I)
CIO Reports To:	Hon. Walter B. Slocumbe, Undersecretary of Defense for Policy
Budget:	\$252 billion
IS Budget:	\$10.2 billion, plus an undisclosed amount for classified operations
IS Employees:	62,000
Employees:	799,921 civilian; 1.5 million military
Web Site:	www.dtic.mil/defenseink/

losophy that is a consequence of the American experience in Vietnam." The Vietnam War was the last American military engagement based on the Napoleonic/Industrial Age model of warfare, a model that calculated the odds of winning wars by comparing the attrition of personnel and ordnance in terms of casualties, tonnage and throw distance, or the range over which a military orga-

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Photo Credit: Scala/Art Resource, NY. Michelangelo Buonarroti. The Creation of Adam: detail of the hands of God and Adam. Sistine Chapel, Vatican Palace, Vatican State.

Lighting the Way

For GE, sharing best practices is more than just a bright idea

AT GENERAL ELECTRIC CO., working as an effective learning organization has spiritual implications. "Sharing best practices in this company is a religion," says Mark Mastrianni, manager of technology at GE's corporate offices in Fairfield, Conn. "We live and breathe it every day."

A culture of what the company calls "boundarylessness" ensures that at GE whatever one person knows, everyone knows. Under CIO Gary M. Reiner, individual performance reviews stress the skills that contribute to the culture. "Executive evaluations cover two major realms," Reiner says, "performance and personal values." Performance is a quantitative measure, but when it comes to the qualitative measure of an executive's per-

stituencies from across the enterprise to share knowledge of best practices, but face time is only one way GE shares intellectual assets. For example, Mastrianni says the company is well on its way to adopting Microsoft Corp.'s Exchange as the e-mail standard on 50,000 desktops. Because GE is moving toward open platform models, the other key to GE's internal communications is an intranet. Mastrianni says that the implementation goal "is to make the [intranet] site available in the right place at the right time" and that executives at GE see the intranet as an important vehicle for dynamic publishing and sharing best practices. In all divisions, executives put even undeveloped ideas online. GE's Technological Leadership Program, an online multimedia just-in-time training program derived from education modules developed at GE's Management Development Institute in Crotonville, N.Y., also is scheduled to go live on its intranet by the end of the summer.

CEO Welch also has committed GE to a 6 Sigma Program. The 6 Sigma goal is to allow fewer than 3.4 customer-perceived defects per 1 million opportunities to err, and the linchpin to the knowledge sharing necessary to achieve that goal is an intranet-accessible data warehouse dedicated to shared

knowledge about quality.

How important is sharing knowledge at GE? Mastrianni says, "If you are a CEO in GE and you mention, 'We've developed a great new business procedure,' the chairman will first ask, 'Who have you shared this with?' People who hoard an idea for personal glory simply do not do well at GE."

-P. Glasser

nization can deliver destructive force. It was a lesson hard-learned.

THE DoD

AT THE HIGHEST LEVEL OF THE DoD, all the money allocated for information technology programs in the armed services is monitored by Anthony Valletta, the acting principal deputy assistant secretary of defense for C³I. Valletta says that to manage so vast an organization, only projects that cost more than \$30 million per year, have a \$120 million total program cost or a \$360 million total life cycle cost are subject to review by him as well as by the CIOs of individual service departments.

Valletta traces to Operation Desert Storm the change from a mind-set that required all military solutions and systems to be unique and developed from scratch to a mind-set that values less-expensive shrink-wrapped off-the-shelf systems. War fighters envied the capacity of data flow they saw on CNN and learned of the capabilities and solutions available in the commercial marketplace. "It is not the technologists pushing for [better IT]," Valletta says. "The demand is coming from the customers, from the war fighters who want this capability. We're helping them to define and acquire it because they see the need." Valletta says the DoD now measures the success of its policies and standards for IT by comparing itself with the private sector. He says his customers ask, "If Wal-Mart or Sears can keep track of material, why can't we?"

Cynthia Rand, the principal director for information management at the DoD, also cites the advantages of the military's new culture. As a civilian coming from the Department of Transportation, she was anxious about joining the DoD, but she says she soon discovered that the centerpiece of the new mind-set is a principle too often forgotten in the private sector. "The focus must always be on the mission [at the DoD]," Rand says. "The military's attitude is always just a matter of 'just give me what I need to get the job done.'" She adds that military leaders rarely care about the nature of the technology as technology. "It's a great atmosphere for a CIO," Rand says.

In the course of her first two weeks at

CIO 100



GE CIO Gary Reiner

sonal values, the only category that supersedes boundarylessness is integrity. Reiner, who reports directly to GE Chairman and CEO John F. Welch, says, "at GE, you are at least as well regarded for borrowing a best practice [across business lines] as [you are for] inventing it."

Reiner meets with varying con-



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the DoD, Rand got her own taste of ground truth. In addition to sensitivity, leadership and communication training, she rode in a tank and shot a laser-aimed weapon. "It was a highlight of my career," she says. Such a commitment to training is a hallmark of any first-class learning organization. During a soldier's entire career, from a private's basic training at Fort Polk, La., to a three-star general's refresher course held at the Pentagon, traditional and technologically augmented training is ongoing. Joyce France, a senior staff analyst who works for Rand, says the DoD belongs to the National Technological University Consortium, a 46-member group of colleges and universities known for excellence in technology education. The courses are available via satellite with videoconferencing capability to civilian and military personnel.

THE ELECTRONIC COLLEGE

REENGINEERING IS AN ACTIVITY that must be taught," says Michael S. Yoemans, director of functional process improvement for the DoD. One consequence of that philosophy and Yoemans' efforts is the Electronic College for Process Innovation (www.dtic.mil/c3i/), a Web site that receives an average of 18,000 hits per week and has won awards from the Smithsonian Institute, the Council on Government Excellence and several other government and professional agencies. The site is a model of the power of open collaboration; the tools therein have been designated by the federal CIO Council as governmentwide best practices.

"Much of the technology and systems we have are readily available for sharing with other federal, state or local agencies," says Paige. "Anything we have is owned by the people." The Web site is a gateway to a model virtual domain dedicated to sharing knowledge. In the site's business-process reengineering section (www.dtic.mil/c3i/bprcd/), Yoemans has summarized the purpose of BPR for the DoD: to reinvent and reengineer DoD functional processes to achieve greater mission effectiveness at a lower cost. The college, available to the public on CD-ROM and online, has more than 1,500 downloadable documents, including

synopses and full reports of more than 160 case studies of DoD projects. Anyone who thinks this stuff is only of military interest might want to look at

"The lives of war fighters depend heavily on effective use of information technology."

—EMMETT PAIGE JR.

Yoemans' pride and joy, a downloadable program called TurboBPR, a 6MB piece of freeware that fully automates the creation of a business plan (www.dtic.mil/c3i/bprcd/3007.htm).

Yoemans illustrates the value of knowledge sharing by referencing the documents about managing consumables and telemedicine. By accessing the documents in the Electronic College, the Defense Logistics Agency reduced inventory cycle time for small purchases from 100 days to four. Even better than saving a few dollars, the same database contains information about how to use the full range of health-care services in a combat environment. That application has reduced death rates of soldiers and simplified planning medical support for any military action. It also has potential benefits for remote-care noncombat cases and may dramatically change medical practice and reduce cost.

COMING ATTRACTIONS

WHAT LIES AHEAD FOR THE DoD? According to Strassmann, the Napoleonic/Industrial Age model of warfare "no longer applies." Instead, he says, "future U.S. engagements will likely be in low-intensity warfare, where small populations with small arms can make war on superior forces. [In such a world], the U.S. weapon of choice is information superiority." One exercise pitted 50 troops armed with state-of-the-art IT against 4,000 non-IT-equipped troops. The IT-empowered group enjoyed map projections of troop movements and immedi-

ate updates about changes in terrain, such as whether a bridge had been destroyed or still existed, an advantage that let them use their limited forces with the greatest effect. The exercise resulted in a standoff.

As another example of future technology advantage, Paige points to the Global Command and Control System, the war-fighting system used by the joint chiefs of staff and war-fighting commanders-in-chief. That worldwide system has approximately 500 commercially manufactured terminals using commercial software. The Defense Message System (DMS), scheduled to be rolled out completely by 1998, also will use commercially available PC terminals and electronic mail packages adapted to meet the specific needs of the military and overall DoD. "Using common standards, the DMS will enable us to [send messages] that include attachments instantaneously and totally transparently between users around the globe," Paige says. "This system will replace the automatic digital integrated network, which dates back to the Vietnam era."

If the executives at the DoD had a single wish, it would be that they could effect change more swiftly. With 586 bosses holding purse strings and peering over the DoD's shoulder from Capitol Hill, it does not make 90-degree turns easily. But Valletta says, "every time an opportunity for change happens, either through the vice president's office or Congress, you'll see the DoD taking the lead, trying to get more changes to existing laws or directives or regulations, whatever it takes, to do better for the taxpayers and get the things out to the war fighters, our customers, as quickly as possible."

Despite its excellence, the DoD is not content to rest on its laurels. Knowledge sharing, innovation and learning are ongoing processes. "No matter how good we are or how good we look from the outside, we are far from perfect," says Paige. "There is still much to be done. Much of it is going on, but we need more.... We know where we are and where we need to go. We also know how to get there when the resources are available." **CIO**

Associate Editor Perry Glasser can be reached at glasser@cio.com.

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10TH ANNUAL

CIO 100

TOP I.T. PERFORMERS

Looking BACK

In 10 years, IS has moved from being a support service to being central to the business

BY MEGAN SANTOSUS



**THE 1996 CIO-100
ISSUE ELICITED MORE
LETTERS OF APPRECIATION**

than any other issue to date. Maybe the theme, "world leaders," had something to do with it. Or it could have been the fetching wall plaques awarded to winning CIOs and their CEOs. Because the annual CIO-100 issue is a monumental



RETROSPECTIVE CIO 100

Allan Ditchfield Speaks

A multitalented CIO is among the honored executives in our pages

CURRENTLY CIO of The Progressive Corp., a large insurer based in Cleveland, Allan Ditchfield has worked in numerous industries including IS, engineering, government, sales and—for good measure—finance and education. Ditchfield has been cited in a CIO-100 issue four times: in 1989 and 1990, when he was senior vice president of systems engineering at MCI Communications Corp., in 1994 and this year.

CIO: Besides the obvious, what are the differences between MCI and Progressive?

Ditchfield: MCI is a “ready, aim, fire” kind of company, where IS is instrumental in getting products to the market. A good

example is the Friends & Family calling program, where IS and marketing went back and forth developing iterative software and systems to support the product. The goal was to get the product to the marketplace, and that’s why the company is so innovative. Progressive is a lot more data-driven, so we do more analysis. Any insurance company can attract customers if the premiums are low enough. The key for us is to attract the good drivers.

CIO: Although IS has different mandates, it sounds as though technology is important at both companies.

Ditchfield: It’s absolutely
Continued on Page 116

project that involves hours of research, hundreds of phone calls and reams of faxes before a single word is written, we ourselves, like recipients of the CIO-100 awards, appreciate a nod now and then

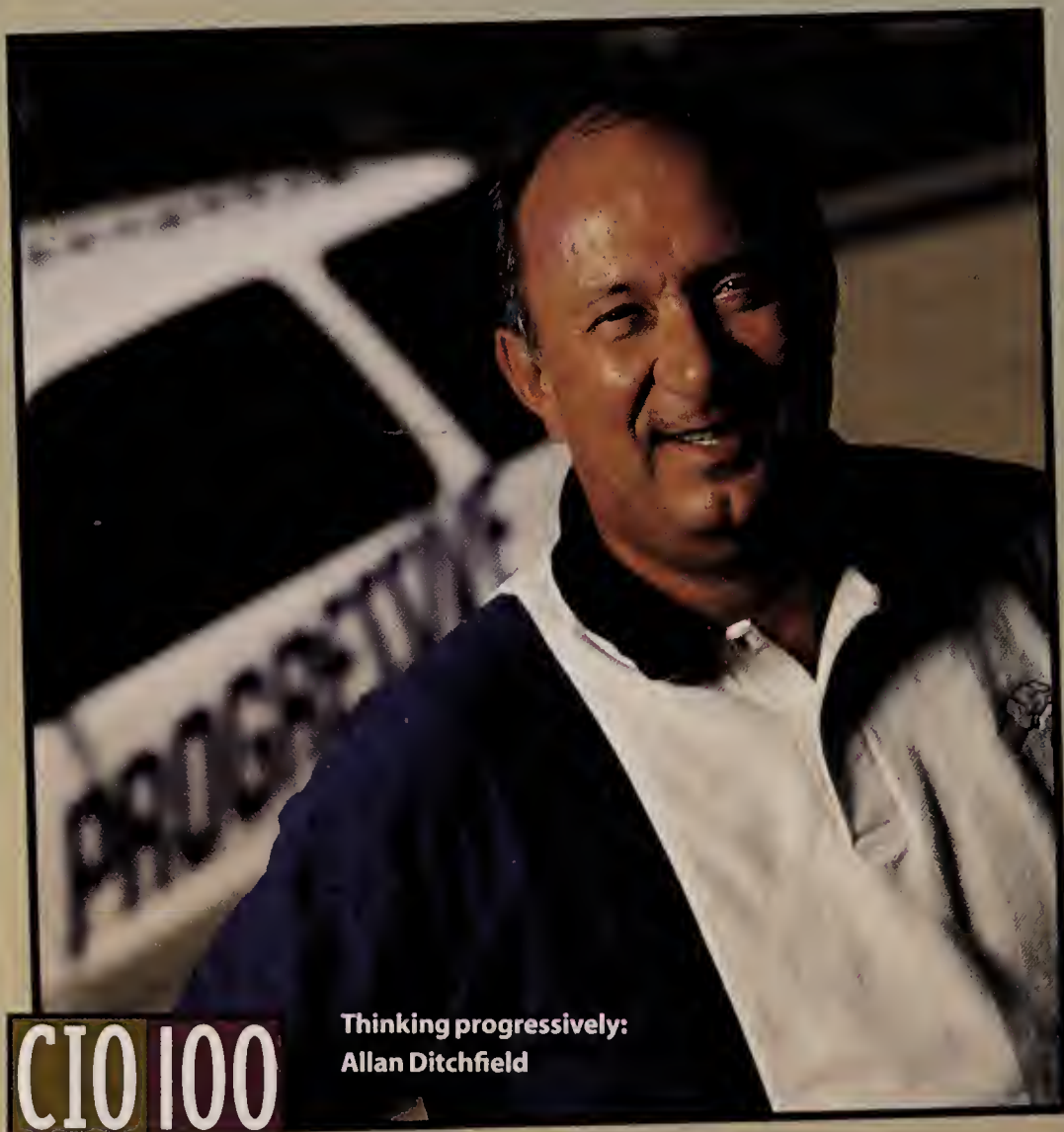
Work on the CIO-100 typically begins around New Year’s and doesn’t end until the issue is in the mail.

for a job well done. Nearly a year has passed, and we remain reluctant to remove the letters of praise tacked up on our office walls from executives at the likes of Ford, British Petroleum, Northern Telecom and Bankers Trust.

At CIO, completing the August issue marks a rite of summer, a time when we breathe a collective sigh of relief and give ourselves a hefty pat on the back. For 10 years running, the August issue has explored the latest business and management trends and celebrated the companies and organizations that excel at them. Some of the themes we’ve covered read like a “What’s What” in business and management circles. In 1990, we looked at innovation; in 1991, we examined quality; and in 1993, we focused on customer service. Through it all, information technology always has had a strategic place within our pages.

HECTIC BEGINNINGS

WORKING ON THE CIO-100 typically begins around New Year’s and doesn’t end until the issue is in the mail. Each year, we have to come up with a theme that is both relevant and hasn’t been explained to death in every other business publication. Then we have to round up a group of management experts who help us hone our focus and typically offer suggestions of industries or companies that merit our attention. After weeks of



CIO 100

Thinking progressively:
Allan Ditchfield



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Continued from Page 114

critical. At MCI, the product manufactured in essence is a dial tone. We provided the ambiance around the dial tone: how customers order service, billing programs, etc. At Progressive, the policy that gets delivered is just a piece of paper. But behind our insurance policies are the systems that allow us to enhance the policy, change it, add financial products and services, and so forth. And if you get into an auto accident, all the things that an agent does are architected with systems. We are in effect both the R&D group and the factory that keeps things running.

CIO: How has IS changed since your first CIO-100 appearance in 1989?

Ditchfield: The available technology has increased exponentially. Over the past 10 years, technology has grown at a compound rate of 40 percent every year. We've had a technology explosion. Not just with platforms but with languages. We've gone from the bronze age to the industrial age in 10 years.

CIO: How has the technology explosion affected the CIO role?

Ditchfield: We're more sophisticated about getting along with the business side. Technology quadruples the variables for the selection of platforms. You can do something on the client, on the server, on the network computer, or on the mainframe. All these choices make the decision process much more complex. CIOs have gained credibility with the business people, resulting in improved confidence in their abilities. Truly, the marriage of the technology with the business process is the key to gaining productivity or improving external customer service.

—M. Santosus

research, faxes and phone calls, we have our list of 100 organizations. At that point, the cycle of research, faxes and phone calls begins anew as we gather the information and conduct the interviews that fill the pages of the finished product.

Thanks to our ever-changing themes, we've written about companies both big and small. In a bit of a journalistic coup, the traditionally press-shy Wal-Mart sat down for a profile in 1992 when we honored high-performance companies for doing more with less. Naturally, we have written in-depth profiles of several companies that consistently practice excellence in IT, such as Federal Express, 3M and Xerox. But in 1994's "New World Order" issue, we covered some interesting organizations that probably otherwise wouldn't have appeared on our radar screens. Even the most well-traveled reengineering guru could learn something from Nypro Inc., Tom's of Maine, Oticon A/S, L-S Electro Galvanizing Co. and Berrett-Koehler Publishers Inc.—which were all singled out for reinventing the way they do business to meet the competitive challenges of the 21st century.

Although we've refined and improved the process of researching and writing articles (see methodology box, Page 42), the challenge for us remains constant. Each year, we need to come up with a timely, relevant theme and tell interesting and informative stories. It's a challenge that seems daunting around January. But come August, we always manage to pull it off.

FROM THEN TO NOW

SINCE THE inaugural CIO-100 issue in 1988, we and our topics have become more sophisticated. The selected companies that year came from 33 diverse industries, including aerospace, surface transportation, telecommunications and metals of the nonferrous variety. Among the most pressing challenges we identified were using technology strategically and figuring out how to network and integrate technology. We noted that 13 CIOs from companies such as Aetna, Boeing, Citicorp and

Wal-Mart reported directly to the CEO, a rare situation and one that indicated that for the remaining companies on our list, the CIO had yet to be included among the upper echelons of management.

Our "look" also reflected that state of affairs. The first few CIO-100 issues were packed with graphs showing where the CIO fit into the corporate hierarchy, the kind of career backgrounds CIOs had, how much money companies spent on technology, the

***The CIO seems
to have moved
closer and closer
to the CEO,
indicating the
strategic migration
of IT to the core
of the business.***

type of technologies that were deployed, preferred vendors and similar barometers of IT's role. It was as if we were announcing the presence of a mysterious new executive position and justifying that existence with a barrage of statistics.

Over time, the CIO seems to have moved closer and closer to the CEO (in 1990, only the CFO was boss to more CIOs than the CEO), indicating the strategic migration of IT to the core of the business. In later CIO-100 issues, our coverage reflects that shift; the charts are largely gone, replaced by substantive articles that belong on a CEO's reading list.

The 1988 issue featured a beaming Richard Koeller of TRW on the cover, looking like a CIO poster-boy in a gray suit, blue-striped shirt and red tie. Inside, short profiles highlighted the top information executives at 100 of the country's largest companies. Back then, size was everything.

The 1989 CIO-100 took on a decidedly more strategic tone. We



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looked at the critical issues faced by 10 different industries and examined IT's role. A panel of IT experts selected those industries where IT was deemed critical; their list included consumer manufacturing, financial services, retailing and, in a bit of a surprise to many of us on staff, government. We then left it to dozens of industry experts to nominate the organizations.

Many of the honorees already were familiar to us for being adept at deploying technology to run their businesses. Companies like Federal Express, Wal-Mart, Procter & Gamble and Ford began to solidify their

status as seemingly perennial CIO-100 honorees (see "IS All-Stars," Page 28). But companies that were less known to us, such as Alaska Airlines Inc. and Ralphs Grocery Co., revealed that smaller regionals also could use IT to great effect.

The 1989 issue was set apart from the earlier version by its greater emphasis on the importance of linking IT and business strategy. Influential CIOs, such as DuWayne Peterson of Merrill Lynch, Katherine Hudson of Eastman Kodak and Allan Ditchfield of MCI (see "Allan Ditchfield Speaks," Page 114), expounded on the strategic merits of technology at their companies.

The importance of the IT-strategy connection shaped the content of all subsequent CIO-100 issues. In 1990, we explored how IT influenced innovation in product development, quality and customer service. And not all innovative companies offered cutting-edge products. At Swedish ball-bearing manufacturer AB SKF, extensive networks linking manufacturing plants helped the company exchange information and thereby extend its global reach in the marketplace.

The 1990 issue marked a shift for the CIO-100, reflecting an evolution in the

Putting Along

An editor remembers our beginnings

I FIRST WALKED INTO THE CIO office in April 1989 to discover that my boss was holed up on vacation in a Costa Rican hacienda for two weeks. I got the distinct impression that no one expected me to show up that particular day. After waiting for about an hour, some kind soul showed me to my workspace (if you want to call it that). I had a desk, a phone and a

standalone 286. The desk was jammed into a spot behind that of the newly hired art assistant. We each faced a blank wall and were seated back-to-back, so there was no space for anyone to walk between us. We had all the luxuries of a German U-boat. Later, I learned to appreciate the close quarters for the good sign that it was: CIO was growing faster than office space was becoming available.

My assignment: Identify and contact the CIOs for 100

companies that were selected on the basis of their productive and innovative use of information technology. The project editor gave me a list of companies; all I had to do was track down "the executive-level person responsible for managing the corporation's computing assets." What

could be easier?

Lots of things, actually. For starters, CIO magazine, or the role of a CIO for that matter, was not the known entity that it is today. Most receptionists I called didn't know what I was talking about when I asked for the CIO. When I was transferred to the appropriate person, many CIOs figured I was selling magazine subscriptions. After I convinced them otherwise, I had to persuade them that we weren't trying to elicit competitively sensitive information, nor engaging in a clandestine effort to turn vendors and consultants loose on them. Winning the CIO-100 award was something they should be proud of.

I logged enough hours cold-calling to make any boiler room operator proud. I spent quality time typing envelopes with a Smith-Corona because I had yet to discover the beauty of mail merge. But when the issue appeared, the hours spent wrestling with office machinery and gently pleading with people over the phone seemed worth it.

Each year since then, the CIO-100 issue poses a monster project for us, but it's been made somewhat easier by the arrival of productivity tools like a network, a database and high-speed fax machines. And most CIOs who receive the CIO-100 are familiar with the publication and seem truly honored to be included. We've come a long way and look forward to going even further.

-M. Santosus



Megan Santosus,
veteran CIO staffer

role of the CIO in general. Rather than looking at companies that excelled at IT, we began our research by unearthing companies that excelled at innovation. We assumed that IT would prove essential for creative business, and we were right. From that issue on, the CIO-100 award focused first on business considerations and management practices. In our writing, we connected the dots of IT achievements to reveal a larger picture.

IT AND BUSINESS EXCELLENCE

THE NEW PRIMARY FOCUS ON business excellence reflects the high profile IT—and by extension the CIO—has gained over the years. At no time was this more apparent than last year's CIO-100 issue, when "world leaders" was the theme. Companies that made our list did so for achieving success on a global scale. Among the usual suspects (Ford, FedEx, P&G, Wal-Mart,

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Voices From the Past

"There will be a need for CIOs as long as technology continues to change at this rapid rate."

-F. Warren McFarlan, Harvard Business School professor



"Quality-conscious companies are more data rich than other companies."

-Curt Reimann, director of the Malcolm Baldrige National Quality Award program



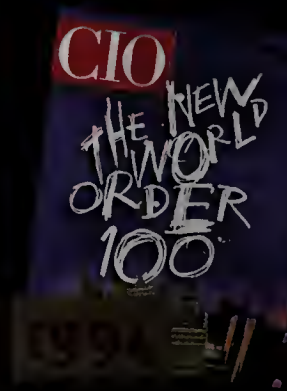
"CIOs need to use their imaginations to figure out the right mix of centralization and decentralization. Technology may change to mirror the organization, but it also goes beyond that role. It can create an infrastructure to change the organization."

-Dave Norton, president of Renaissance Solutions Group



"Business can't be done without IT, and IT can't be done without the business side. They have to go together in a much more dramatic and intimate fashion than ever before."

-Nicholas P. Vitalari, vice president of CSC Research and Advisory Services



"Most IS managers haven't done anything but play...middle-manager bureaucrat-fighter. If there's anything they're good at, it's hoarding their power."

-Thomas J. Peters, management guru



"We have blended IT capabilities by integrating systems either directly or indirectly. For the customer, it appears seamless."

-Dennis H. Jones, CIO and senior vice president of logistics, Federal Express Corp.



"Everybody underestimates the cost of change and the time it takes, so they underinvest."

-Rosabeth Moss Kanter, Harvard Business School professor



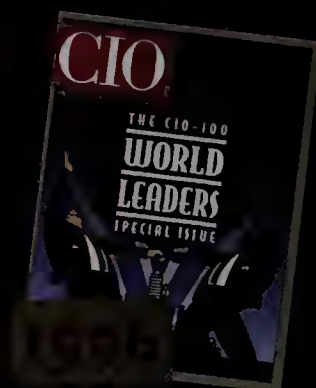
"I'm a little like a coach. I try to put things into business perspective while empowering employees to bring information to the people who really touch the customer."

-Patricia Wallington, CIO, Xerox Corp.



"You really do have to realize that talented people live all over the world. If you think you're going to run everything from your central headquarters in the U.S., you're crazy."

-Frank R. Caccamo, vice president of management systems, The Procter & Gamble Co.



et. al.), we included such international players as Bata Shoe Organization, a Canadian company; IKEA Home Furnishings of Sweden; and entertainment software company Berkeley Systems Inc., from California. In every case, IT was a critical component for thriving in

international venues.

This year's CIO-100 issue, Top IT Performers, looks at general business and operational excellence and explores the connection with IT. For the 10th August in a row, we can take pride in a project that has loomed on our calendars

since the previous December.

Of course, that also means in just another four months we'll begin work on yet another CIO-100. **CIO**

Associate Editor Megan Santosus can be reached at santosus@cio.com.



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A black and white photograph of three men standing in front of a classical building facade. The man on the left is older, balding, and wears a bow tie. The man in the center is middle-aged with a beard and glasses. The man on the right is younger with glasses. They are all looking slightly to the right with serious expressions.

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LEADERS in I.T. EXCELLENCE

From providing sound infrastructure to creating a learning culture, the 1997 CIO-100 honorees exemplify excellence in an IS organization

Allegiance Corp. *McGaw Park, Ill.*

www.allegiance.net

Supplier of health-care products and cost management services

Kathy Brittain White, Senior VP & CIO, reports to Chairman & CEO

Lester B. Knight, Chairman & CEO

Employees: 22,000

Revenues: \$4.5B

IS Employees: 530

IS Budget: \$82M

AlliedSignal Inc. *Morristown, N.J.*

www.alliedsignal.com

Mfr. of aerospace & automotive products, chemicals, fibers, plastics & advanced materials

Larry Kittelberger, VP & CIO, reports to Chairman & CEO

Lawrence A. Bossidy, Chairman & CEO

Employees: 76,600

Revenues: \$14B

IS Employees: 1,900

IS Budget: \$540M

American Airlines Inc. *Dallas*

www.americanair.com

Airline

Scott D. Nason, VP, IT Services & CIO, reports to Senior VP, Corporate Services

Robert L. Crandall, Chairman & CEO

Employees: 88,000

Revenues: \$16B

IS Employees: 25

IS Budget: \$400M

American Express Co. *New York*

www.americanexpress.com

Worldwide travel, financial services and network services provider

Allan Loren, Executive VP & CIO, reports to Chairman & CEO

Harvey Golub, Chairman & CEO

Employees: 72,299

Revenues: \$16.24B

IS Employees: N/A

IS Budget: N/A

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JOHN GERDELMAN
president,
networkMCI
Services, on
the freedom
to make
mistakes

Amoco Corp. *Chicago*

www.amoco.com

Producer of oil, natural gas, refined products and chemicals

Marshall T. Jones, Acting VP, IT, reports to Senior VP, Shared Services
H. Laurance Fuller, Chairman & CEO

Employees: 41,700
IS Employees: N/A

Revenues: \$36B
IS Budget: N/A

Andersen Consulting *Chicago*

www.ac.com

Management consulting

Charles M. Paulk Jr., Partner & CIO, reports to Managing Partner
George T. Shaheen, Managing Partner

Employees: 44,801
IS Employees: N/A

Revenues: \$5.3B
IS Budget: N/A

AT&T Corp. *Basking Ridge, N.J.*

www.att.com

Communications services for consumers and businesses

Ron Ponder, Executive VP & CIO, reports to President & COO
Robert E. Allen, Chairman & CEO

Employees: 130,000
IS Employees: N/A

Revenues: \$52B
IS Budget: N/A

Banc One Corp. *Columbus, Ohio*

www.bancone.com

Multiservice financial company

Marvin W. Adams, CTO, reports to Chairman & CEO, Banc One Services Corp.
John B. McCoy, Chairman & CEO

Employees: 50,000+
IS Employees: N/A

Assets: \$101.8B
IS Budget: N/A

Bell Atlantic Corp. *Philadelphia*

www.bellatlantic.com

Telecommunications

Majid R. Naderkhani, VP, Information Systems & CIO, reports to Vice Chairman
Raymond W. Smith, Chairman & CEO

Employees: 62,600
IS Employees: 3,500

Revenues: \$13.08B
IS Budget: N/A

BellSouth Corp. *Atlanta*

www.bellsouth.com

Communications

Richard L. Harder, VP & CIO, BellSouth Telecom., reports to Exec. VP, Corp. Relations
F. Duane Ackerman, President & CEO, BellSouth Corp.
Jere A. Drummond, President & CEO, BellSouth Telecommunications

Employees: 82,000
IS Employees: 3,800

Revenues: \$19B
IS Budget: N/A

Blockbuster Entertainment Inc. *Dallas*

www.blockbuster.com

Neighborhood entertainment retailer

Joe Phillips, Executive VP & CIO, reports to Chairman & CEO
John F. Antioco, Chairman & CEO

Employees: 65,000
IS Employees: 300

Revenues: \$3.5B
IS Budget: N/A

Boeing Co., The *Seattle*

www.boeing.com

Aerospace

Terence V. Milholland, VP, Information Services & CIO, reports to Senior VP
Philip M. Condit, Chairman & CEO

Employees: 151,788
IS Employees: N/A

Revenues: \$22.7B
IS Budget: N/A

Brigham and Women's Hospital *Boston*

Health-care services

Mary Finlay, Corporate Director, Information Systems, reports to VP & CIO
Jeffrey Otten, CEO

Employees: 8,331
IS Employees: 100

Revenues: \$644.4M
IS Budget: \$19M

British Petroleum Co. PLC, The *London*

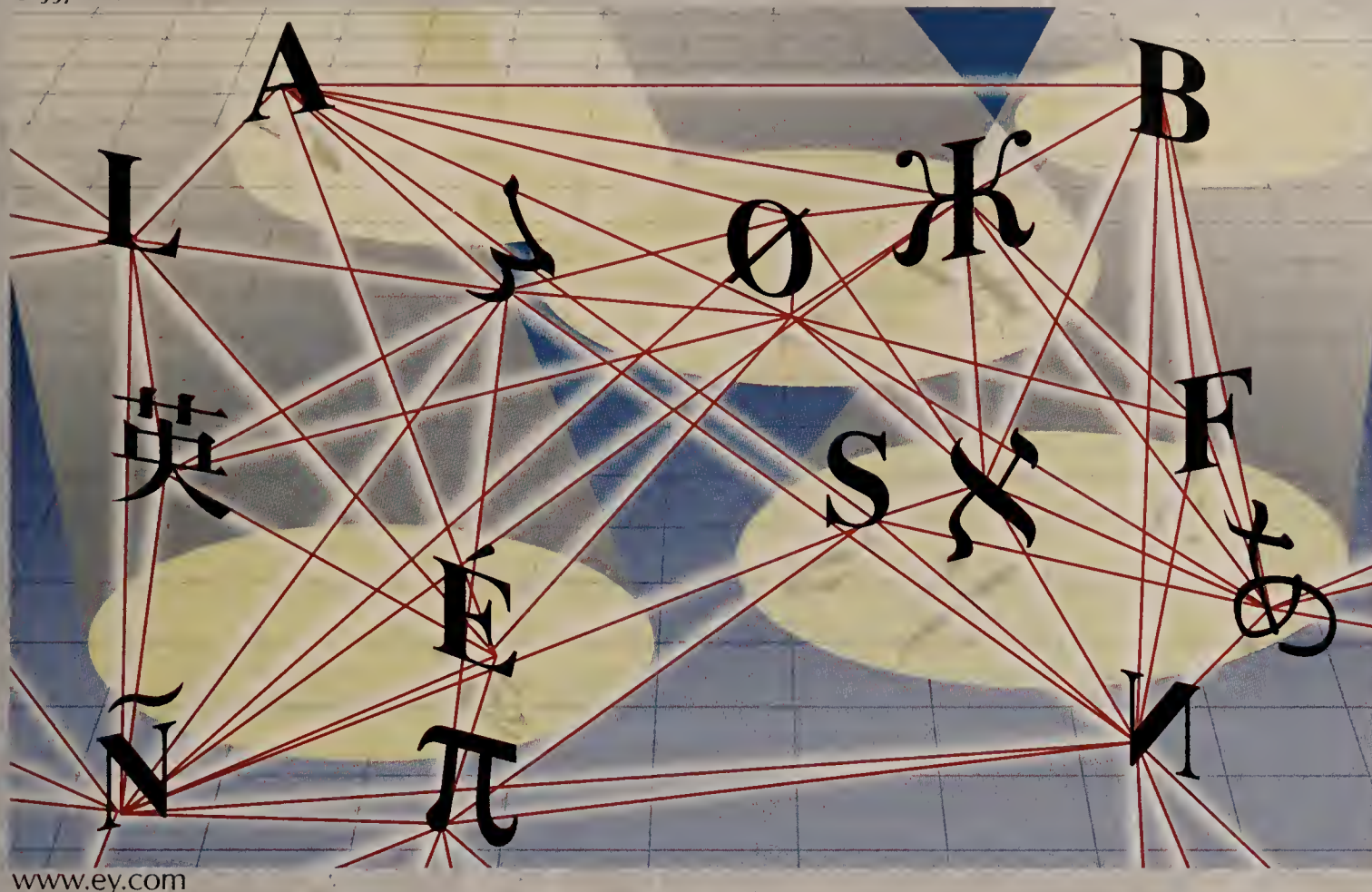
www.bp.com

Oil & petrochemicals

John Browne, Chief Executive

Employees: 53,150
IS Employees: N/A

Revenues: \$6.5B
IS Budget: N/A



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"By and large, high-performing IT organizations happen because you have a high-performing overall organization. Technology is just a tool and has no value unless it is applied intelligently."

JOHN GLASER
vice president
and CIO,
Partners
HealthCare
System Inc.,
on innovation

Browning-Ferris Industries Inc. *Houston*

www.bfi.com

Waste management

Sam T. Baty, VP & CIO, reports to Senior VP & CFO
Bruce E. Ranck, CEO

Employees: 41,000
IS Employees: 140

Revenues: \$5.8B
IS Budget: N/A

Carolina Power & Light *Raleigh, N.C.*

www.cplc.com

Electricity and energy services

Carolyn G. Osborne, VP, Info. & Telecom. Svcs., reports to Exec. VP & CEO
William Cavanaugh III, President & CEO

Employees: 6,600
IS Employees: 400

Revenues: \$3B
IS Budget: \$80M

Caterpillar Inc. *Peoria, Ill.*

www.cat.com

Construction, mining, agricultural machinery and engines

Robert P. Hinds, CIO, reports to CFO
Donald V. Fites, Chairman & CEO

Employees: 57,000
IS Employees: 2,900

Revenues: \$16.5B
IS Budget: \$425M

Centers for Disease Control & Prevention (CDC) *Atlanta*

www.cdc.gov

Promotes health and quality of life by preventing disease, injury and disability

CIO reports to Associate Director for Management & Operations
David Satcher, Director

Employees: 7,000
IS Employees: 365

Budget: \$2.4B
IS Budget: \$105M

Charles Schwab Corp., The *San Francisco*

www.schwab.com

Financial services

Dawn G. Lepore, CIO, reports to President & CEO, Charles Schwab & Co. Inc.
Charles R. Schwab, Chairman & CEO

Employees: 11,000
IS Employees: 1,120

Revenues: \$1.9B
IS Budget: N/A

Chase Manhattan Corp., The *New York*

www.chase.com

Financial services

Denis O'Leary, CIO, reports to President & COO
Walter Shipley, Chairman & CEO

Employees: 67,700
IS Employees: 7,500

Assets: \$336B
IS Budget: \$1.8B

Chevron Corp. *San Francisco*

www.chevron.com

Petroleum exploration, production, manufacturing, transportation, marketing and research

Donald L. Paul, VP, Tech. & Environmental Affairs, reports to Chairman & CEO
Kenneth T. Derr, Chairman & CEO

Employees: 35,310
IS Employees: 1,800

Revenues: \$42.7B
IS Budget: \$410M

Cigna Corp. *Philadelphia*

www.cigna.com

Insurance

J. Raymond Caron, Senior VP & CIO, reports to CFO
Wilson H. Taylor, Chairman & CEO

Employees: 42,800
IS Employees: 2,628

Assets: \$99B
IS Budget: N/A

Cisco Systems Inc. *San Jose, Calif.*

www.cisco.com

Computer networking

Peter Solvik, VP, Info. Systems & CIO, reports to Sr. VP, Customer Advocacy
John Chambers, President & CEO

Employees: 10,500
IS Employees: 250

Revenues: \$4.1B
IS Budget: \$120M

Citicorp *New York*

www.citibank.com

Banking & financial services

Colin Crook, Senior Technology Officer, reports to Chairman
Mary Alice Taylor, Executive VP, Global Operations & Technology
Edward D. Horowitz, Executive VP, Advanced Development
John S. Reed, Chairman

Employees: 90,000+
IS Employees: 8,000+

Revenues: \$21.5B
IS Budget: N/A

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Title

Company

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City

State

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OF SOFTWARE IS FINALLY
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Bill Gates, Chairman and CEO
of Microsoft Corporation
February 1997

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Ed Yourdon, Application Development Strategies

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"I need to do two things: Make sure we're aligned with customers by improving processes or improving the bottom line. And I have to make sure I have a workforce that enjoys coming to work. I spend a great deal of time dealing with the soft side."

FRANK BARBEE
manager of information technology, Phillips Petroleum Co., on building a top-notch IS organization

Coca-Cola Co., The *Atlanta*

www.cocacola.com

Mfr. of soft drinks, noncarbonated beverage concentrates and juice products

William S. Herald, VP & CIO, reports to Senior VP & CFO

Roberto C. Goizueta, Chairman & CEO

Employees: 26,000

IS Employees: N/A

Revenues: \$18.5B

IS Budget: N/A

Columbia/HCA Healthcare Corp. *Nashville, Tenn.*

www.columbia.net

Health care

Richard E. Chapman, Senior VP, Information Systems, reports to Chmn. & CEO

Richard L. Scott, Chairman & CEO

Employees: 285,000

IS Employees: 950

Revenues: \$19.6B

IS Budget: N/A

Compaq Computer Corp. *Houston*

www.compaq.com

PC design, manufacture and distribution

John W. White, CIO, reports to President & CEO

Eckhard Pfeiffer, President & CEO

Employees: 18,000+

IS Employees: N/A

Revenues: \$18B

IS Budget: N/A

Computer Sciences Corp. *El Segundo, Calif.*

www.csc.com

Management consulting and information solutions

Pete Gross, VP, Technology, reports to Chairman, President & CEO

Van B. Honeycutt, Chairman, President & CEO

Employees: 45,000

IS Employees: 300

Revenues: \$5.6B

IS Budget: \$15M

CSX Corp. *Richmond, Va.*

www.csx.com

Multimodal freight transportation and contract logistics services

John F. Andrews, CIO, President, CSX Technology Inc.

John Snow, Chairman, President & CEO

Employees: 47,000

IS Employees: 1,050

Revenues: \$10.5B

IS Budget: \$320M

Dell Computer Corp. *Round Rock, Texas*

www.dell.com

Manufacturer of computer systems

Jerry Gregoire, VP & CIO, reports to the Office of the CEO

Michael Dell, Chairman & CEO

Employees: 11,000

IS Employees: N/A

Revenues: \$8.7B

IS Budget: N/A

DuPont Co. *Wilmington, Del.*

www.dupont.com

Chemicals, fibers, polymers and diversified business and petroleum

Cinda A. Hallman, VP & CIO, reports to Exec. VP, DuPont; Chmn., DuPont Asia Pacific

John A. Krol, President & CEO

Employees: 95,000

IS Employees: 1,100

Revenues: \$4.2B

IS Budget: \$650M

Eaton Corp. *Cleveland*

www.eaton.com

Electrical and electronic controls, vehicle components

Derek R. Mumford, VP, Info. Technologies, reports to Exec. VP, CFO

Stephen R. Hardis, Chairman & CEO

Employees: 54,000

IS Employees: 900

Revenues: \$7.0B

IS Budget: \$160M

EDS *Plano, Texas*

www.eds.com

Information technology services

Todd Carlson, CIO, reports to Executive VP

Lester M. Alberthal Jr., Chairman & CEO

Employees: 100,000

IS Employees: N/A

Revenues: \$14.4B

IS Budget: N/A

Elf Atochem North America Inc. *Philadelphia*

www.elf-atochem.com

Chemical manufacturing

Robert M. Rubin, CIO, reports to President & CEO

Bernard D. Azoulay, President & CEO

Employees: 4,500

IS Employees: 139

Revenues: \$1.8B

IS Budget: \$20M

Eli Lilly and Co. *Indianapolis*

www.lilly.com

Pharmaceuticals

Thomas Trainer, VP & CIO, reports to President & COO

Randall L. Tobias, Chairman & CEO

Employees: 29,000

IS Employees: N/A

Revenues: \$7.35B

IS Budget: N/A



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CIO 100 LIST OF WINNERS

"In a dynamic marketplace, it's not wrong to constantly readjust and rearrange. It just means you know more than you did yesterday, and you need to make different decisions with that knowledge."

STEVEN AKIN
president,
Fidelity
Investments
Systems Co.,
on learning

Federal Express Corp. *Memphis, Tenn.*

www.fedex.com

Express transportation

Dennis H. Jones, CIO, reports to Chairman, President & CEO
Frederick W. Smith, Chairman, President & CEO

Employees: 127,268 Revenues: \$10.3B
IS Employees: 5,000 IS Budget: \$1.0B

Fidelity Investments *Boston*

www.fidelity.com

Financial services

Steven Akin, President, Fidelity Investments Systems Co.
Edward C. Johnson III, Chairman & CEO

Employees: 23,960 Assets: \$469.8B
IS Employees: N/A IS Budget: N/A

Ford Motor Co. *Dearborn, Mich.*

www.ford.com

Manufacturer of trucks and cars

Bernard F. Mathaisel, Exec. Dir. & CIO, reports to VP, Quality & Process Leadership
Alex Trotman, Chairman, President & CEO

Employees: 370,000 Revenues: \$147B
IS Employees: N/A IS Budget: N/A

Frito-Lay Co. *Plano, Texas*

www.fritolay.com

Snack foods

Steve Schuckenbrock, CIO, reports to CFO
Steven Reinemund, Chairman & CEO

Employees: 43,000 Revenues: \$6.6B
IS Employees: 450 IS Budget: N/A

GE Information Services *Rockville, Md.*

www.geis.com

Electronic commerce

Raj Rawal, Director of Information Management, reports to President & CEO
Harvey F. Seegers, President & CEO

Employees: 2,600 Revenues: N/A
IS Employees: N/A IS Budget: N/A

Gateway 2000 Inc. *North Sioux City, S.D.*

www.gw2k.com

Computer manufacturer

David J. McKittrick, Senior VP & CFO, reports to President & COO
Theodore Waitt, Chairman & CEO

Employees: 9,700 Revenues: \$5B
IS Employees: N/A IS Budget: N/A

General Electric Co. *Fairfield, Conn.*

www.ge.com

Diversified manufacturing, services and technology

Gary M. Reiner, CIO, reports to Chairman & CEO
John F. Welch, Chairman & CEO

Employees: 239,000 Revenues: \$79.18B
IS Employees: N/A IS Budget: N/A

Georgia-Pacific Corp. *Atlanta*

www.gp.com

Forest products

Charles F. Williams, VP, Information Resources, reports to CFO
A.D. "Pete" Correll, Chairman & CEO

Employees: 47,500 Revenues: \$13.02B
IS Employees: N/A IS Budget: N/A

Gillette Co., The *Boston*

Manufacture and sale of consumer products

Patrick J. Zilvitis, VP, Corp. Info. Tech., reports to Senior VP, Finance
Alfred M. Zeien, Chairman & CEO

Employees: 44,100 Revenues: \$9.69B
IS Employees: N/A IS Budget: N/A

Granite Rock Co. *Watsonville, Calif.*

www.graniterock.com

Rock, concrete, asphalt, construction

Sanjar Chakamian, VP & CIO, reports to President & CEO
Bruce W. Woolpert, President & CEO

Employees: 450 Revenues: N/A
IS Employees: N/A IS Budget: N/A

Hewlett-Packard Co. *Palo Alto, Calif.*

www.hp.com

Computers and measurement and communications equipment and services

Michael Rose, VP & CIO, reports to Executive VP & CFO
Lewis E. Platt, Chairman, President & CEO

Employees: 112,800 Revenues: \$38.42B
IS Employees: 6,000 IS Budget: \$1.2B



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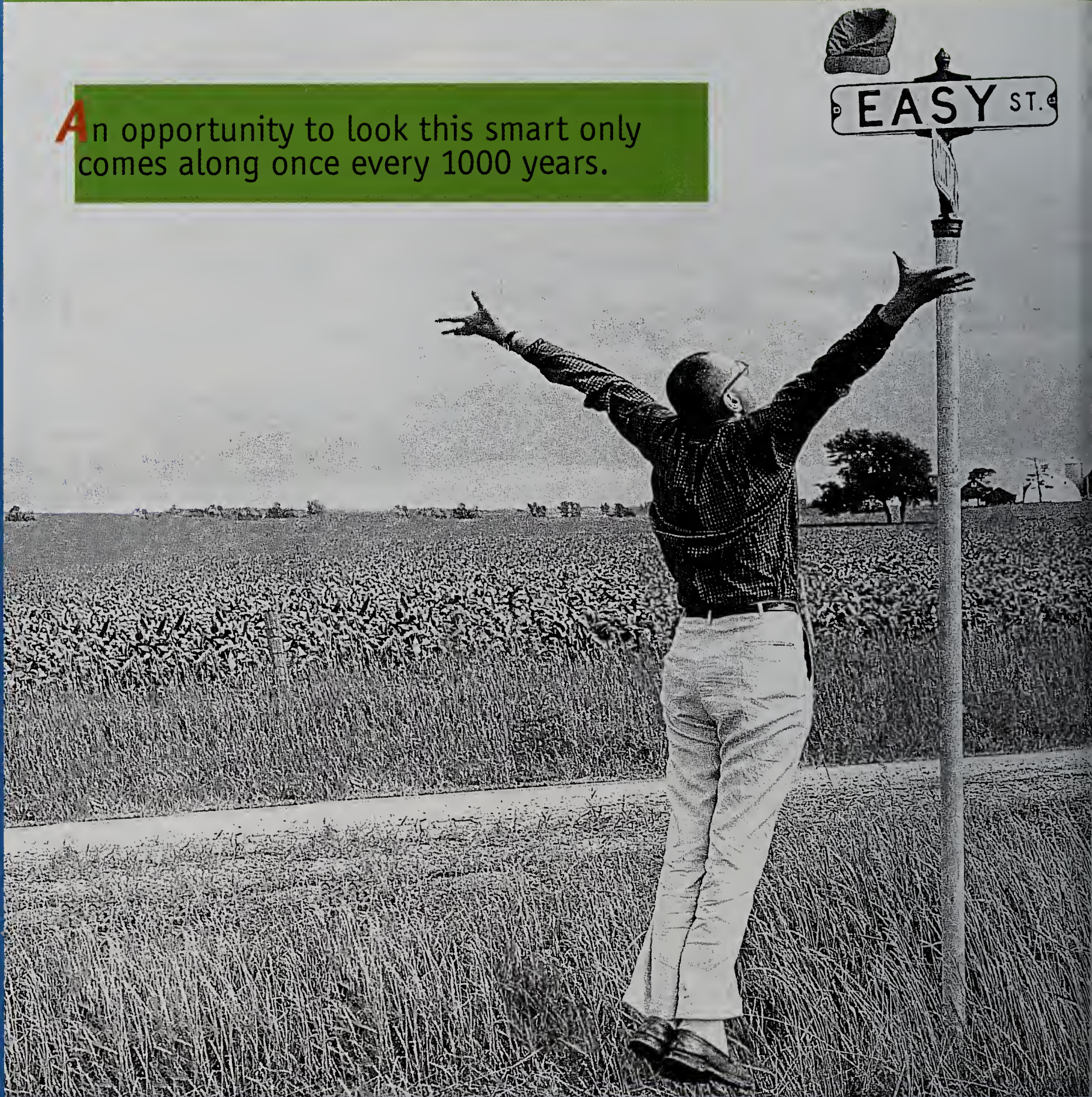
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|----------------|--------------------|----------------------|
| ✓ Activities | ✓ Responsibilities | ✓ Tools |
| ✓ Deliverables | ✓ Dependencies | ✓ Techniques |
| ✓ Roles | ✓ Resources | ✓ Estimating Metrics |

Process Engineer contains industry best practices for a wide range of topics. Process Engineer provides your project managers and team members with proven, repeatable and automated methodologies for their development projects. The quickest way from point A to point B doesn't have to be a painful process of trial and error. Save time, money and sustain end-product quality by successfully applying best practices.

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CIO 100 LIST OF WINNERS

"I spend a lot of time with one foot in the management camp. Being a member of the operations committee takes about 100 days a year of my time. The other foot is in the coaching camp. I'm a coach and a cheerleader, representing business to the IT guys and representing the IT agenda to business."

THOMAS TRAINER
vice president
and CIO, Eli Lilly
and Co., on
business/IT
alignment

Hoffmann-La Roche Inc. *Nutley, N.J.*

Health care

Kevin Walsh, VP, Information Technology, reports to President & CEO
Patrick J. Zenner, President & CEO

Employees: 7,150
IS Employees: 202

Revenues: N/A
IS Budget: N/A

Home Depot Inc., The *Atlanta*

Home improvement retailer

Ron Griffin, Senior VP, Information Services, reports to Chief Administrative Officer
Bernard Marcus, Chairman & CEO

Employees: 112,310
IS Employees: N/A

Revenues: \$19.5B
IS Budget: N/A

Hughes Space and Communications Co. *Los Angeles*

Manufactures commercial, defense and scientific spacecraft

Gary Osborn, Business Unit Leader, Information Technology, reports to President
Donald L. Cromer, President

Employees: 7,500
IS Employees: N/A

Revenues: N/A
IS Budget: N/A

IBM Corp. *Armonk, N.Y.*

Mfr. of computer systems, software, networking systems, storage devices and microelectronics

Gerald D. Prothro, VP & CIO, reports to Senior VP, Strategy
Louis V. Gerstner Jr., Chairman & CEO

Employees: 240,615
IS Employees: N/A

Revenues: \$75.94B
IS Budget: N/A

Intel Corp. *Santa Clara, Calif.*

Mfr. of computer chips and PC, networking and communications products

Carlene Ellis, VP & Director, IT, reports to Executive Office
Andrew S. Grove, Chairman & CEO

Employees: 50,000
IS Employees: N/A

Revenues: \$20.8B
IS Budget: N/A

Johnson & Johnson *New Brunswick, N.J.*

Health-care products manufacturer

JoAnn Heffernan Heisen, VP & CIO, reports to Vice Chairman, Board of Directors
Ralph S. Larsen, Chairman & CEO

Employees: 89,300
IS Employees: N/A

Revenues: \$21.6B
IS Budget: N/A

J.P. Morgan & Co. Inc. *New York*

Financial services

Peter A. Miller, CIO
Douglas A. Warner, Chairman & CEO

Employees: 15,500
IS Employees: 1,500

Revenues: \$6.9B
IS Budget: \$1B

Kraft Foods Inc. *Northfield, Ill.*

Food manufacturer

James R. Kinney, CIO, reports to Senior VP, Finance & Systems
Robert S. Morrison, Chairman & CEO

Employees: 40,000
IS Employees: 1,000

Revenues: \$27B
IS Budget: N/A

Levi Strauss & Co. *San Francisco*

Branded apparel

Linda Glick, Senior VP & CIO, reports to COO
Robert Haas, Chairman & CEO

Employees: 37,500
IS Employees: 750

Revenues: \$7.1B
IS Budget: N/A

Lockheed Martin Corp. *Bethesda, Md.*

Aeronautics, electronics, information & services and systems integration

Joseph B. Cleveland, Pres., Enterprise Info. Sys., reports to Pres., Info. & Svcs. Sector
Norman R. Augustine, CEO

Employees: 180,000
IS Employees: N/A

Revenues: \$27B
IS Budget: N/A

Lucent Technologies *Murray Hill, N.J.*

Telecommunications equipment

Herb Vinnicombe, VP & CIO, reports to Executive VP/CFO
Henry Schacht, Chairman & CEO

Employees: 122,000
IS Employees: N/A

Revenues: \$23.79B
IS Budget: N/A

www.homedepot.com

www.hughespace.com

www.ibm.com

www.intel.com

www.jnj.com

www.jpmorgan.com

www.kraftfoods.com

www.levi.com

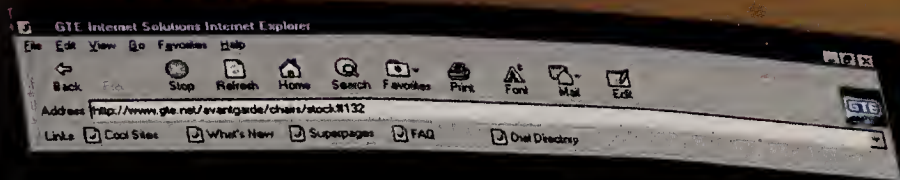
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CIO 100 LIST OF WINNERS

"I keep a running list for the research and development part of my budget of things that have worked and things that haven't, and I review it with my boss. We usually have 20 percent to 30 percent outright failures, and that's just fine."

ROBERT WALKER
former CIO,
Hewlett-
Packard Co.,
on learning

Mayor's Office of Information Services *Philadelphia*

www.phila.gov

Municipal information technology

Louis S. Malfara, Acting CIO, reports to Mayor
Edward G. Rendell, Mayor

Employees: 147
IS Employees: 147
Revenues: N/A
IS Budget: \$11.7M

McDonald's Corp. *Oak Brook, Ill.*

www.mcdonalds.com

Restaurants

Carl Dill, Senior VP, reports to CFO
Michael Quinlan, Chairman & CEO

Employees: 500,000+
IS Employees: N/A
Revenues: \$31.8B
IS Budget: N/A

MCI Communications Corp. *Washington*

www.mci.com

Communications

Lance B. Boxer, CIO
John Gerdelman, President, networkMCI Services

Employees: 55,000
IS Employees: 7,000
Revenues: \$18.5B
IS Budget: \$1B

Merck & Co. Inc. *Whitehouse Station, N.J.*

www.merck.com

Pharmaceuticals

Raymond V. Gilmartin, Chairman, President & CEO

Employees: 49,074
IS Employees: N/A
Revenues: \$19.83B
IS Budget: N/A

Merrill Lynch & Co. Inc. *New York*

www.ml.com

Financial services

Edward Goldberg, Exec. VP, Op., Svcs. & Tech., reports to Chairman & CEO
David Komansky, Chairman & CEO

Employees: 49,800
IS Employees: 4,214
Assets: \$839B
IS Budget: N/A

Microsoft Corp. *Redmond, Wash.*

www.microsoft.com

Computer software

John Connors, VP & CIO, reports to COO
William H. Gates, Chairman & CEO

Employees: 20,561
IS Employees: N/A
Revenues: \$8.67B
IS Budget: N/A

Monsanto Co. *St. Louis*

www.monsanto.com

Life sciences products and chemicals

Pat J. Fortune, CIO, reports to CFO
Robert B. Shapiro, Chairman & CEO

Employees: 28,000
IS Employees: N/A
Revenues: \$9.2B
IS Budget: N/A

Motorola Inc. *Schaumburg, Ill.*

www.motorola.com

Communications equipment, systems and services, and semiconductors

Christopher B. Galvin, CEO

Employees: 139,000
IS Employees: N/A
Revenues: \$28B
IS Budget: N/A

NASA Kennedy Space Center *Kennedy Space Center, Fla.*

www.ksc.nasa.gov

Preparing and launching space missions

Jimmy J. Akin, CIO, reports to Center Director
Roy D. Bridges Jr., Center Director

Employees: 2,100
IS Employees: 250
Revenues: N/A
IS Budget: N/A

NationsBank Corp. *Charlotte, N.C.*

www.nationsbank.com

Banking

Jim Dixon, President, NationsBanc Services Co. Inc., reports to CEO
Hugh McColl, CEO

Employees: 84,000
IS Employees: N/A
Assets: \$227B
IS Budget: N/A

Nintendo of America Inc. *Redmond, Wash.*

www.nintendo.com

Home entertainment systems

Howard Ringoen, VP, Information Services
Howard Lincoln, Chairman
Minorh Arakawa, President

Employees: 2,000
IS Employees: N/A
Revenues: N/A
IS Budget: N/A



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JEFFREY LEWIS
senior vice president of underwriting, USAA Property and Casualty, on infrastructure management

Northrop Grumman Corp. *Los Angeles*

www.northgrum.com

Designer, integrator and mfr. of aerospace, electronics, information systems and aerostructures

Herb Anderson, VP & GM, Data Systems and Svcs. Div., reports to Chmn. & CEO
Kent Kresa, Chairman & CEO

Employees: 47,000
IS Employees: 1,600

Revenues: \$8.1B
IS Budget: \$300M

OfficeMax Inc. *Shaker Heights, Ohio*

www.officemax.com

Office supply superstore

Doug Schwinn, CIO, reports to CFO
Michael Feuer, Chairman & CEO

Employees: 23,402
IS Employees: N/A

Revenues: \$3.2B
IS Budget: N/A

Oracle Corp. *Redwood Shores, Calif.*

www.oracle.com

Information management software

Gerald Corvino, Senior VP & CIO, reports to Executive VP & CFO
Lawrence J. Ellison, Chairman & CEO

Employees: 28,000
IS Employees: 320

Revenues: \$5.2B
IS Budget: N/A

Pacific Gas and Electric Co. *San Francisco*

www.pge.com

Gas and electric utility

John C. Danielsen, VP, Computer & Telecom. Svcs., reports to Sr. VP, Corp. Svcs.
Stanley T. Skinner, Chairman & CEO

Employees: 22,000
IS Employees: 1,000

Revenues: \$9.6B
IS Budget: N/A

PepsiCo Inc. *Purchase, N.Y.*

www.pepsico.com

Beverages, snacks, restaurants

Allan B. Deering, VP, Management Information, reports to Controller
Roger A. Enrico, Chairman & CEO

Employees: 486,000
IS Employees: 2,000

Revenues: \$32B
IS Budget: \$350M

Phillips Petroleum Co. *Bartlesville, Okla.*

www.phillips66.com

Petroleum

N. Frank Barbee, Manager, IT, reports to Senior VP, Corporate Technology
W.W. Allen, CEO

Employees: 17,000
IS Employees: 600

Assets: \$12B
IS Budget: \$200M

PNC Bank Corp. *Pittsburgh*

www.pncbank.com

Banking and financial services

Timothy G. Shack, Sr. VP, Tech. & Processing Svcs., reports to Chairman & CEO
Thomas O'Brien, Chairman & CEO

Employees: 25,020
IS Employees: 1,100

Assets: \$73.3B
IS Budget: \$119M

Procter & Gamble Co., The *Cincinnati*

www.pg.com

Consumer products

Todd A. Garrett, CIO, reports to President
John E. Pepper, Chairman & CEO

Employees: 103,000
IS Employees: N/A

Revenues: \$35.28B
IS Budget: N/A

Progressive Corp., The *Mayfield, Ohio*

www.auto-insurance.com

Auto insurance

Allan W. Ditchfield, CIO, reports to Chairman, President & CEO
Peter B. Lewis, Chairman, President & CEO

Employees: 9,557
IS Employees: 842

Revenues: \$3.4B
IS Budget: N/A

Publix Super Markets Inc. *Lakeland, Fla.*

Retail grocery

Danny Risener, VP, Information Systems, reports to Executive VP
Howard M. Jenkins, Chairman & CEO

Employees: 101,000
IS Employees: N/A

Revenues: \$10.4B
IS Budget: N/A

Roadway Express Inc. *Akron, Ohio*

www.roadway.com

Motor carrier

Pamela J. Kelley, Director, IT, reports to VP, Operations, Planning & Engineering
Michael W. Wickham, President & CEO

Employees: 25,500
IS Employees: 132

Revenues: \$2.4B
IS Budget: \$72M

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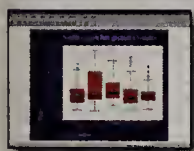
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CIO 100 LIST OF WINNERS

Royal Bank Financial Group *Toronto, Ontario*

www.royalbank.com

Financial services

Robert M. Juneau, Senior VP, Systems & Technology, reports to Vice Chairman
John E. Cleghorn, Chairman & CEO

Employees: 55,000
IS Employees: 2,100

Assets: \$157B
IS Budget: \$293M

Science Applications International Corp. (SAIC) *San Diego*

www.saic.com

Systems integration, telecom., security, health systems and services, env. systems and engineering

CIO reports to Chairman & CEO

Dr. J. Robert Beyster, Chairman & CEO

Employees: 22,000
IS Employees: 11,486

Revenues: \$2.4B
IS Budget: \$31M

Sears, Roebuck and Co. *Hoffman Estates, Ill.*

www.sears.com

Retail

Joseph Smialowski, Sr. VP, Info. Sys. & CIO, reports to Chairman & CEO
Arthur C. Martinez, Chairman & CEO

Employees: 265,000
IS Employees: 1,100

Revenues: \$38B
IS Budget: \$425M

Shell Oil Co. *Houston*

www.shellus.com

Oil, gas & chemicals

M.C. Bone, Director, Technology, reports to VP, Finance
P.J. Carroll, President & CEO

Employees: 20,000
IS Employees: N/A

Revenues: \$29.2B
IS Budget: N/A

Silicon Graphics Inc. *Mountain View, Calif.*

www.sgi.com

Manufactures interactive computing systems

Mike Graves, VP, Information Services & CIO, reports to Senior VP, Administration
Edward R. McCracken, CEO

Employees: 10,500
IS Employees: 400

Revenues: \$2.9B
IS Budget: N/A

Sony Corp. of America *New York*

www.sony.com

Electronics and hardware

Frank Sakai, VP, MIS, reports to Executive VP
Howard Stringer, President

Employees: 23,000
IS Employees: 53

Revenues: \$14.5B
IS Budget: N/A

Sprint Corp. *Westwood, Kan.*

www.sprint.com

Telecommunications

George N. Fuciu, Pres., Tech. Svcs., reports to Pres. & COO, Long Distance Div.
William T. Esrey, Chairman & CEO

Employees: 48,000
IS Employees: 6,000

Revenues: \$14B
IS Budget: N/A

State Street Corp. *Boston*

www.statestreet.com

Financial asset servicing/money management

Marshall N. Carter, Chairman & CEO

Employees: 12,800
IS Employees: N/A

Revenues: N/A
IS Budget: N/A

Sun Microsystems Inc. *Mountain View, Calif.*

www.sun.com

Network computing

William J. Raduchel, CIO, reports to Chairman, President & CEO
Scott McNealy, Chairman, President & CEO

Employees: 19,356
IS Employees: N/A

Revenues: \$8B
IS Budget: N/A

Supervalu Inc. *Minneapolis*

Food distribution and food retailing

H.S. Smith, Senior VP, Information Technology, reports to Executive VP & CFO
Michael W. Wright, Chairman, President & CEO

Employees: 48,400
IS Employees: 400

Revenues: \$16.6B
IS Budget: \$85M

TRW Inc. *Cleveland*

www.trw.com

Automotive, space and defense

Pete Janak, VP & CIO, reports to CFO
Joseph T. Gorman, Chairman & CEO

Employees: 68,000
IS Employees: N/A

Revenues: \$10B
IS Budget: N/A

"You cannot have good service without alignment, because you wouldn't know where to focus that good service. It would be like bringing the wrong sports equipment to the game."

ROBERT RUBIN
CIO, Elf Atochem
North America
Inc., on internal
customer service



Bob Gilbertson
CEO and President
NCD

“With NCD, ‘Power Windows’ will be standard equipment at Rover.”



HOW ARE NETWORK COMPUTERS IMPACTING THE HIGHLY-COMPETITIVE AUTO INDUSTRY?

Britain's Rover Group recently completed installation of over 700 network computers from NCD. Explora™ NCs give users direct access to any application, anywhere on the network including legacy and developing applications. Currently, NC desktops provide parts management, Bill of Materials systems and much more. "We're also extending capabilities of the NCs in the production environment" said David Ward, Rover's Engineering Systems Architecture Consultant. What's more, NCs will be powering up Windows™ at Rover.



Rover is planning to use NCD's WinCenter Pro™ running on NT as a "Microsoft® application server," allowing each single desktop device to easily access Windows apps.

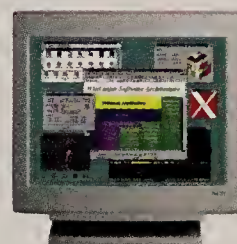
The user simply clicks on the application icon and the server delivers the application.

"While there will always be a place for the PC, we're impressed by this desktop solution which makes it simple for NC and workstation users to access all the MS-based applications" said Ward.

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DAVID POTTRUCK
president and
CEO, Charles
Schwab & Co.
Inc., on
business/IT
alignment

Unilever *London*

www.unilever.com

Manufactures fast-moving consumer goods

James Duckworth, Head of IT, reports to Director, Strategy & Technology Group
Niall Fitzgerald, Co-Chairman

Employees: 300,000
IS Employees: N/A

Revenues: \$52.1B
IS Budget: N/A

United Airlines *Elk Grove Village, Ill.*

www.ual.com

Airline

Andrew P. Studdert, Senior VP & CIO, reports to President/COO
Gerald Greenwald, CEO

Employees: 86,000
IS Employees: 1,500

Revenues: \$16B
IS Budget: \$338M exp.;
\$120M cap.

United Parcel Service of America Inc. *Atlanta*

www.ups.com

Transportation/shipping

Ken Lacy, CIO, reports to Chairman & CEO
James Kelly, Chairman & CEO

Employees: 335,000
IS Employees: 4,000

Revenues: \$22.37B
IS Budget: \$1.4B

United Services Automobile Association (USAA) *San Antonio*

Insurance and diversified financial services

Gen. Donald R. Walker, Senior VP & CIO, reports to Chairman & CEO
Gen. Robert T. Herres, Chairman & CEO

Employees: 16,573
IS Employees: 2,143 auth.;
2,013 assigned

Revenues: \$6.7M

IS Budget: \$513M

United States Coast Guard *Washington*

www.dot.gov/dotinfo/uscg

U.S. government, public service, military

Rear Adm. John T. Tozzi, Dir. Info. & Tech., reports to Asst. Commandant for Sys.
Admiral Robert E. Kramek, Commandant

Employees: 41,500
IS Employees: 44

Budget: \$3.83B
IS Budget: N/A

United States Department of Defense *Washington*

www.dtic.mil/defenseink

Defends the national interest of the United States

Joan Dempsey, Acting Asst. Sec. of Defense for Command, Control,
Comm. & Intelligence, reports to Undersecretary of Defense for Policy
Hon. William S. Cohen, Secretary of Defense

Employees: 799,921 civ.;
1.5M mil.
IS Employees: 62,000

Budget: \$252B

IS Budget: \$10.2B

United States Department of State *Washington*

www.state.gov

Formulates and implements foreign policies

Eliza McClenaghan, CIO, reports to Secretary of State
Hon. Madeline K. Albright, Secretary of State

Employees: N/A
IS Employees: N/A

Revenues: N/A
IS Budget: N/A

Wal-Mart Stores Inc. *Bentonville, Ark.*

www.wal-mart.com

Retail

Randall Mott, Senior VP & CIO, reports to Vice Chairman & COO
David Glass, President & CEO

Employees: 734,000
IS Employees: 1,200

Revenues: \$104.8B
IS Budget: \$500M

Wm. Wrigley Jr. Co. *Chicago*

www.wrigley.com

Chewing gum manufacturer

Dennis R. Mally, VP, Information Services, reports to Senior VP
William Wrigley, President & CEO

Employees: 7,800
IS Employees: 150

Revenues: \$1.8B
IS Budget: N/A

Xerox Corp. *Stamford, Conn.*

www.xerox.com

Business equipment and supplies

Patricia M. Wallington, Corporate VP & CIO, reports to Chairman & CEO
Paul A. Allaire, Chairman & CEO

Employees: 86,700
IS Employees: 300

Revenues: \$17.4B
IS Budget: N/A

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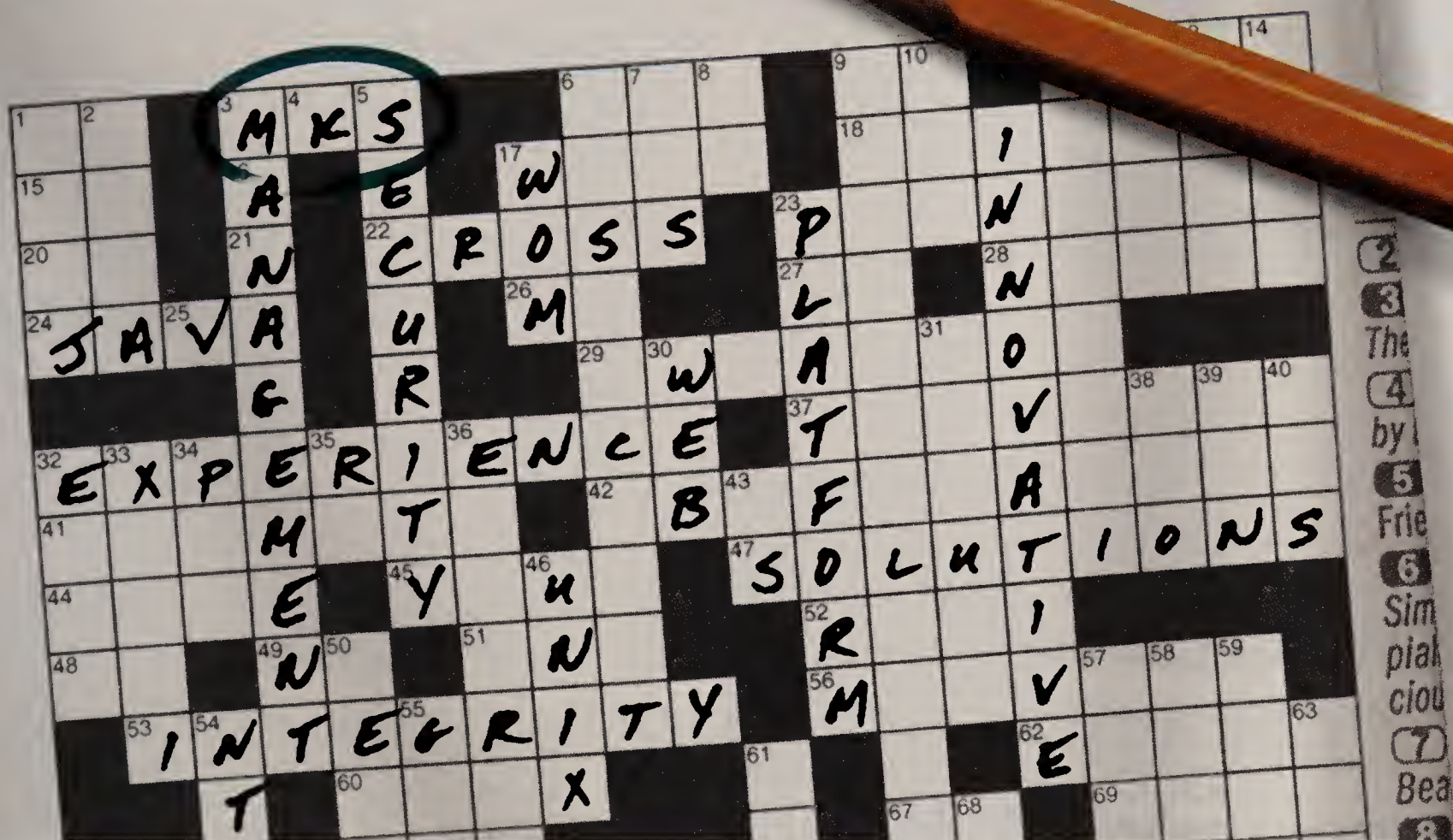
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That crackling heard within corporations is the sound of new connections being made. Nearly one-third of those polled reported that they are busily linking departments or divisions electronically.

Three-quarters of the IT decision makers identify the Internet/World Wide Web as among the most important tools they must adopt over the next five years to remain competitive.

Those results mirror the findings of *CIO*'s recent editorial survey. IT decision makers named the Internet/Web as the

communication technology of greatest priority. In addition, interest in intranets jumped threefold from the previous year. One year ago, the interest in Internet/Web software applications ranked eighth. By spring of 1997, it rose significantly to the third spot.

Technology that enables enterprise collaboration also grabbed respondents' attention, with client/server and database management systems ranked as the top two software areas of interest.

While no study can measure the speed with which change comes to technology – and to the way businesses work – IT executives polled by *CIO* gave a clue about the pace of change for businesses. When it comes to connectivity, they're thinking big: Nineteen percent identified asynchronous transfer mode (ATM), the super-fast communications technology, as an area of interest. How fast is super fast? About 150 times the bandwidth of high-speed options like T-1 lines. ☒

With the Internet top of mind for so many CIO and business executives, CIO Magazine will provide more information to make their Internet applications succeed (See page 4 for details).

Top 10 Software Applications of Interest to *CIO* Readers

- | | |
|----------------------------------|----------------------------------|
| 1) Client/Server | 6) Groupware |
| 2) Database Management Software | 7) Intranets |
| 3) Internet | 8) Object-Oriented Technologies |
| 4) Application Development Tools | 9) Windows NT |
| 5) Java | 10) Data Warehousing/Data Mining |

Top 10 Communications Technologies of Interest to *CIO* Readers

- | | |
|----------------------|----------------------------------|
| 1) Internet/WWW | 6) ISDN |
| 2) ATM | 7) Networking/Network Management |
| 3) Intranets | 8) TCP/IP |
| 4) Cellular/Wireless | 9) LAN |
| 5) Frame Relay | 10) Internetworking Equipment |

CIO Magazine Editorial Survey, April, 1997

CIOs TALK ABOUT...

HOW IT PRIORITIES HAVE CHANGED IN 10 YEARS

To celebrate the 10th anniversary of *CIO*, *The CIO WRAPSHEET* asked several IT executives, about how their priorities have changed since *CIO*'s inception.

Q How Have Your IT Priorities Changed During the Past 10 Years?

A During the past decade, IT priorities have experienced a major shift with the reduction of transaction-based computing to an explosion in client/server. Integrated communication systems, including email, telephony, Web access and video have become core requirements of nearly every shop. Future priorities will include the deployment of high-speed LANs, WANs and Internet/intranet/extranet. I see the distribution of knowledge capital as a major force in future IT planning. The *CIO* of the next 10 years will deploy easy-to-use technology that aids in revenue generation, cuts costs and improves the productivity of every employee.

Robert F. Schuler
Director of Information Technology
North America
LEK/Alcar Consulting Group

A Networking and communications are much more important and complex than before. Ten years ago we were concerned with providing applications to our main office and a few remote sites.

Today it's global email, collaboration, database sharing and applications. We are also becoming less inwardly focused. We need to link customers' and suppliers' systems with our corporate systems. Our job is now much less 'development' and more 'integration.'

James Kindred
Director of IT
Cascade Corporation

A As the global economy continues to become more information-based, the information part of IT is becoming a source of competitive advantage for those companies that see that information can and must be used as a strategic offensive weapon. The *CIO*'s role is becoming increasingly important – to lead the company in its strategic use of information, while ensuring the technologies that create, move and use information for the company deliver the expected value. *CIO*s must influence the direction of their companies, much like CEOs.

John M. Boushy
Senior VP, IT and Marketing Services
Harrah's Entertainment, Inc. ☒



CIO GIVES READERS WHAT THEY WANT: AN ENHANCED CIO MAGAZINE IN TWO SECTIONS, TWICE MONTHLY

What's NEW[@]

CIO Communications, Inc.

Based on subscriber research, which indicates the top two concerns of *CIO* readers are the Internet/Web and the enterprise, CIO Communications President and Group Publisher Joe Levy announces a first in magazine publishing: an enhanced *CIO* Magazine to be published in two sections, twice monthly, beginning with the October 1 issue.

The magazine's twice-monthly frequency will continue (with the exception of its customary year-end December 15/January 1 "combo" issue) with editorial coverage expanding to satisfy readers' requirements for insight into IT solutions that exploit Internet/Web commerce opportunities and enhance profitability through enterprise collaboration.

Starting in October, *CIO* subscribers will receive the magazine in a polybag that includes two separate, conveniently packaged sections. The first section will continue to address the range of issues *CIO* Magazine has brought to its readers for 10 years. The second section with enhanced coverage will focus on one of the two key topics on CIOs' radar screens.

With the issue that mails on the 1st of the month, subscribers will receive *CIO's* new *Web Business* section. On the 15th of the month,

subscribers will receive *CIO's* new *Enterprise* section (See profiles of the new sections below).

"These enhancements to our core editorial product will provide readers with the information they need to succeed in their careers, and advertisers with enhanced opportunities to position their marketing message in the most appropriate section," says Levy. He adds that *CIO* will increase its circulation more than 25% to 125,000 beginning with the October 1 issue. "With an advertising rate increase of only 9%, advertisers will benefit with a much lower CPM while still targeting only the top-tier CIO's as well as IT and business executives in the technology buying process." ❖

CIO's Enterprise Section: IT From a Different Perspective

CIOs and business executives are teaming up to create IT solutions that align with corporate goals. Executives from every discipline across the enterprise — including marketing, human resources, manufacturing, finance and customer service — need to know about the benefits of technology and how it can streamline business processes and enhance profits.

With case studies that demonstrate how CIOs, IT and manage-

ment executives are joining forces to create winning IT solutions, *CIO's Enterprise* section will provide a tool for IT executives to educate and empower their peers across the enterprise. The perspective of "the other O's" — including CEOs, COOs, CFOs — in successfully using IT to solve business problems will provide the foundation for enhanced partnerships between CIOs and business executives, as well as shorten the sales cycle for advertisers' IT products and services. ❖

CIO's Web Business Section: Reaching the Executive-Level Decision Makers in 'Net Strategy

The verdict is in and the research substantiates it: As the business world moves from information islands to the connected enterprise,

CIOs and top business executives have become the most influential decision-makers in Internet/Web initiatives. Strategic use of the Internet requires the expertise of seasoned executives with the vision to create new business applications and the clout to purchase the products and services re-

quired to carry out that vision.

CIO's Web Business section will cater to this executive-level audience. Continuing our tradition of cutting-edge reporting on the issues and

trends that are shaping the strategic use of the Internet, the World Wide Web, intranets and extranets, *CIO's Web Business* will include real-world case studies, interviews with business leaders and reports on the technology solutions that are delivering on the promise of Web-based commerce. ❖

For more information on the enhancements to *CIO Magazine*, our Executive Programs, our Web site *CIO.COM*, and job opportunities at CIO Communications, visit our Web site Press Center at www.cio.com/marketing/press_center.html.

CIO's Target Audience: Final Decision Makers

CIOs, IT and Business Executives

CIOs, IT and Business Executives

CIOs, IT and Business Executives

CIOs, IT and Business Executives

Top Priorities

Web/Internet

Enterprise

Peer Development

1:1 Networking

Enhanced Information Resources from CIO

CIO & CIO's Web Business 1st of the month

CIO & CIO's Enterprise 15th of the month

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The CIO WRAPSHEET

YOUR GUIDE ON MARKETING TO INFORMATION EXECUTIVES

SUMMER 1997

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VOLUME 4, No. 3



SOUND BITES

Ernst & Young's partnership with CIO Communications is an essential component to reaching and collaborating with executive level IT decision makers who control the direction, purchasing and long-range strategic plans of their enterprise.

Ernst & Young leverages industry knowledge and experience to provide clients with solutions that are responsive to their individual needs and concerns. CIO's unique perspective on technology and the value it brings to business makes it the perfect vehicle for delivering our firm's message to a high-level audience.

We've been particularly pleased with the variety of CIO programs, and the opportunity they afford us to deliver our message to an impressively large number of people in our target audience. It's rare to find an organization whose every event is equally valuable to us, in terms of the caliber of participants and their relevance to our objectives.

Dave Petrou
Marketing Manager
Ernst & Young LLP

MORE THAN HOT: ENTERPRISE SYSTEMS, WEB

Like 386 PCs and dumb terminals, the notion of technology islands within a company no longer fits the way businesses work.

The new emphasis in corporate IT strategy is on technology that touches multiple departments and business units, from the executive boardroom to the loading dock.

According to CSC Index's 1997 study of the critical issues of information systems management, budgets are going up – 60% of respondents expect an increase – and all eyes are on the enterprise.

Corporations are busier than ever spreading technology through departments and business units. Thirty-seven percent of the IT decision-makers are rolling out applications that cross departments and functions, up from just 20% in 1996.

What's more, the cross-functional systems are at the heart of the companies' IT strategies. More than a third of those surveyed say the en-

terprise implementation is the most important systems-development initiative underway at their companies.

**Thirty-seven percent of the
IT decision-makers
are rolling out applications
that cross departments
and functions, up from
just 20% in 1996.**

What functions are the new systems supporting? Anything that reaches customers in some way. The top five functions targeted for enterprise applications are customer service, sales, distribution, inventory management, and logistics.

Infrastructure is on the minds of IT decision-makers

everywhere. Respondents to the CSC survey in North America, Europe, Asia, and the Pacific regions all reported that developing and enhancing information networks within their companies was the most important infrastructure improvement initiative they had underway.

For marketers of technology products and services, that means important new opportunities: Forty-four percent of respondents worldwide expect to spend between \$1 million and \$10 million on their most important initiative.

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CIO Communications, Inc.

PARTNERS IN TIME

When the CIO's focus is the enterprise, collaboration with other top executives is key to success

After joining the MacGregor Medical Association (MMA) in Houston in 1979, Keith Martin worked his way through the operations ranks. He opened new facilities, ran the finance department and supervised purchasing.

Around the time Martin was beginning his career at MMA, James Birge hired on with the HMO as a staff physician, eventually rising to senior physician and then medical director.

Today Martin is MMA's CIO, and Birge the chief executive. Together they have spearheaded MMA's \$8-million technology investment over the last six years.

"We're kindred spirits in that we knew IT could bring real value to the medical community," says Martin. "As we worked our way up, we gained a real business sense for what was going on in the organization."

Such collaborations have become vital to the success of IT organizations. Because conventional ROI metrics often shortchange the benefit that IT systems deliver, conveying the systems' value to top management and to boards of directors can be tricky.

Armed with Birge's goal of using technology to differentiate MMA from other health-care providers, Martin drew plans over several years that called for a network architecture and, eventually, a GUI-based client/server application that doctors in the HMO's 27 centers now use.

Through the many board presentations, Birge was a key ally. "He was actively involved in making sure this project was going to be successful," says Martin, "reviewing our requirement documents and using his background the way I used mine."

Such close collaboration helps IT weather the ups and downs of any project. When the rigors of a client/server development project last year demanded an upgrade to Visual Basic 4.0 and Windows 95, "that meant recompiling our Windows 3.1 code to NT," says Martin. "It would delay our project, but our relationship gave him the confidence to sign off on the upgrade."

That smart partnering also proves the adage that success breeds more success: MacGregor Medical Association is a 1997 winner of CIO's Enterprise Value Awards. These awards honor the collaborative effort that brings return on investment and improved business operations through the innovative use of IT. ✕

ROUNDTABLE DISCUSSION

In a roundtable discussion being aired on American Airlines and America West this summer, Ron Gollobin, news reporter for WCVB-TV, the ABC affiliate for Boston, interviews CIO Communications VP of Technology Tim Horgan and CIO Editorial Director Lew McCreary on the future of the Web. Here are a few excerpts:

GOLLOBIN There's been a hurricane of hype about business on the Internet, both positive and negative. Where do you think the real opportunities are?

HORGAN I'm convinced the Web is going to change the way people work in two to three years. We are already seeing some examples in larger companies. Ford has about 80,000 white collar workers on the Web and expects to have 95,000 by the end of '97.

Ford is using the Web to disseminate information – to share how people do work, to provide best practices. Its employees are now working together in ways that they never have before. Information that used to take six months to access can now be obtained via the Web with a few clicks.

GOLLOBIN What about the costs of Web-based development?

HORGAN It used to take development teams months or years to build large monolithic applications. The Web lets you do two things. You can build smaller applications that take weeks or months to develop and you can integrate these applications with what already exists. Because of the Web's ability to link things together, you can create new functions – new ways of doing business – very easily. So the cost savings are significant.

McCREARY The federal government mandated that the electrical utilities industry make available its excess capacity. For a meager \$500,000, a Web application was developed that served 70% of the nation's electric utilities industry.

Compared with traditional development, which might have cost in the mid to high seven figures, that's information technology on the cheap. In addition, the industry estimates it is saving \$10 million per year because fewer documents have to be distributed and updated and it doesn't have to distribute as much software. ✕

For a full transcript or audiocassette, please contact Susan Watson at 508-935-4190 or visit our Web site at www.cio.com/flightalk.